UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF CONNECTICUT

UNITED STATES OF AMERICA, et al.,	:	Civil Action No. H-79-704 (JAC)
Plaintiffs	:	
v.	:	
SOLVENTS RECOVERY SERVICE OF NEW ENGLAND, INC.,	:	
Defendant	:	

CERTIFICATION OF JAMES R. HULM

JAMES R. HULM, of full age, certifies as follows:

1. I am the Vice President of defendant Solvents Recovery Service of New England, Inc. ("SRSNE") and a licensed professional engineer in the State of New Jersey. I make this certification in response to the Declaration of Matthew Hoagland ("Hoagland Dec.") submitted by the United States Environmental Protection Agency ("EPA") in support of its motion to enforce the provisions of the Consent Decree entered in this action on February 23, 1983, and for other relief.

2. The Consent Decree, as set forth in the Hoagland Declaration, contemplates three general types of activity to be undertaken by SRSNE. The first is the Facility Improvements and Pollution Prevention Measures contemplated by Paragraph 7 of the Consent Decree (Hoagland Dec., ¶11). The second is the

Program for Abatement and Containment of Groundwater Pollution at and in the Immediate Vicinity of SRSNE contemplated by Paragraphs 8-11 of the Consent Decree ("On-Site System", Hoagland Dec., ¶12). The third is the Program for Isolation and Containment of Groundwater Pollution Beyond the Influence of the Groundwater Recovery System contemplated by Paragraphs 12-13 of the Consent Decree ("Off-Site System", Hoagland Dec., ¶16).

3. Over the past seven years I and other officers of SRSNE, as well as consultants retained by SRSNE to achieve compliance with the Consent Decree, have provided EPA with plans, designs, as-built data, test results and other information relating to our implementation of the three programs. The EPA personnel with whom we have communicated are many. Our original contacts were John R. Moebes, Chief of the Waste Response and Compliance Branch (Region 1), and his staff members Joseph DeCola and Barbara McAllister. Joel Blumstein of the EPA's Office of Regional Counsel was also an early contact. As of January 1985, David Webster became the Project Manager, and as of December 1985, Heather M. Ford succeeded to Mr. Moebes' responsibilities. In October of 1986, Joel R. Balmat became the Remedial Project Manager; in the following year he was succeeded by David Lang. During this period John Podgurski, a chemical engineer, was frequently on the site as an EPA representative. In 1988, Ms. Ford's duties were taken over by Margaret J. Leshen, Chief of the Connecticut Superfund

Section, and Merrill S. Hohman, Director of the Waste Management Division. Matthew Hoagland, on whose declaration the EPA relies, did not become involved with the SRSNE site until January of 1989 (Hoagland Dec., ¶4). This certification and its exhibits set forth the prior background of communications between SRSNE and the EPA concerning the on-site system which is necessary to evaluate and respond to the Hoagland Declaration.

4. Attached hereto in chronological order are copies of documents in the files of SRSNE dating back to the early submissions under the Consent Decree in 1983 and relevant to issues raised in the EPA's motion. These documents are identified as follows:

Exhibit 1. Letter dated August 29, 1983, from SRSNE's counsel to John R. Moebes of EPA.

Exhibit 2. Letter dated September 23, 1983, from John R. Moebes of EPA to James Hulm of SRSNE.

Exhibit 3. Letter dated October 6, 1983, from John R. Moebes of EPA to James Hulm of SRSNE.

Exhibit 4. Letter dated October 17, 1983, from James R. Hulm of SRSNE to John R. Moebes of EPA.

Exhibit 5. Letter dated October 27, 1983, from James R. Hulm of SRSNE to John Moebes of EPA.

Exhibit 6. Letter dated November 28, 1983, from John R. Moebes of EPA to James Hulm of SRSNE.

Exhibit 7. Letter dated December 16, 1983, from John R. Moebes of EPA to James Hulm of SRSNE.

Exhibit 8. Letter dated January 13, 1984, from James R. Hulm of SRSNE to John R. Moebes of EPA.

Exhibit 9. Letter dated December 19, 1984, from Stephen R. Kellogg of YWC to James R. Hulm of SRS.

Exhibit 10. Press release dated May 21, 1985.

Exhibit 11. Press release dated December 20, 1985.

Exhibit 12. Letter dated March 3, 1986, from James R. Hulm of SRSNE to Joel Blumstein, Esq., of EPA.

Exhibit 13. Letter dated May 12, 1986, from James R. Hulm of SRSNE to David Webster of EPA.

Exhibit 14. Letter dated August 7, 1986, from Heather M. Ford of EPA to James Hulm of SRSNE.

Exhibit 15. Letter dated September 22, 1986, from Heather M. Ford of EPA to James Hulm of SRSNE.

Exhibit 16. Letter dated November 25, 1985, from James R. Hulm of SRSNE to Joel Balmat of EPA, with enclosures.

Exhibit 17. Letter dated July 17, 1987, from Robert E. Kaliszewski of Connecticut DEP to James R. Hulm of SRS, enclosing draft NPDES permit and EPA's comments.

Exhibit 18. Letter dated October 17, 1988, from Keith E. Warner of YWC to Margaret Leshen of EPA.

Exhibit 19. Letter dated November 7, 1989, from Margaret Leshen of EPA to James Hulm of SRSNE.

Exhibit 20. Letter dated November 22, 1989, from Carleton H. Boll of SRSNE to Margaret Leshen of EPA.

5. I have reviewed Paragraph 3G of the Hoagland Declaration and the accompanying footnote which states that Mr. Hoagland received the documents from which he made his well depth calculations in the Information Request Response submitted by SRSNE in January of 1990. It is true that these documents were included in the Information Request Response, but they had previously been sent to Joel Balmat of EPA on November 25, 1986 (see Exhibit 16). Among the few documents included in the Information Request Response that had not already been furnished to EPA was the contemporaneous well log prepared by SRSNE's consultants, York Wastewater Consultants, Inc., a copy of which is annexed hereto as Exhibit 21.

6. I have also reviewed Paragraphs 87 and 88 of the Hoagland Declaration and the accompanying exhibits, which state that SRSNE failed to adhere to the schedule established by the Consent Decree for failing to submit hydraulic verification reports. It is unquestionably true that some of SRSNE's reports were not submitted on time, and some were not submitted at all. I have no explanation for this lapse except to state that it was certainly not intentional, since SRSNE has consistently striven to do everything in its power to comply with the Consent Decree. I can only state that the omission was inadvertent and caused by an administrative oversight.

7. Attached to this Certification as Exhibit 22 is an accurate estimate of the costs that SRSNE has incurred through August, 1990, in complying with the Consent Decree.

8. I certify that the foregoing statements are true. I am aware that if any of them are false, I am subject to punishment.

James R. Hulm

Dated: 9/26/90

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004585 cat.

ALAN V. LOWENSTEIN
RICHARD M. SANDLER
MURRY D. BROCHIN
BENEDICT M. KOHL
ARNOLD FISHER
JOSEPH LEVOW STEINBERG
MATTHEW P. BOYLAN
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PLEASE REPLY TO ROSELAND

REFER TO FILE NO.

LEE HILLES WERTHEIM
KENNETH J. SLUTSKY
DUSTAN T. SMITH
DAVID L. HARRIS
ZULIMA V. FARBER
INA B. LEWISOHN
WILLIAM P. MUNDAY
MARION PERCELL
LINDA POPE TORRES
DEREK L. A. HACKETT*
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DANIEL J. BARKIN
LANCE D. CASSAK
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GEORGE J. MAZIN
ERIC TUNIS
SUSAN A. FEENEY
CHARLES D. HELLMAN
JAMES STEWART
EDWARD A. HOGAN
KEITH H. ANSBACHER
GREGORY G. CAMPISI
JOSEPH A. FOGELSON
STEPHEN J. HART
ROBERT M. KERN
LAURA R. KUNTZ
WARD C. LARACY
BRIAN M. STOLAR
PHILIP L. GUARINO

*N.Y. BAR ONLY

August 29, 1983

John R. Moebes
Chief, Waste Management Division
Waste Response Compliance Branch
United States Environmental Protection Agency
Region One - J. F. Kennedy Building
Boston, Massachusetts 02203

Re: United States of America v.
Solvents Recovery Service of
New England, Inc.: Consent Decree

Dear Mr. Moebes:

This will confirm the substance of our proposal made to you orally on August 23, 1983, together with certain additional information which you requested at that time.

Based upon the engineering report dated July 23, 1983 and submitted to you by letter of August 18, 1983, and the supplementary letter report dated August 10, 1983, SRSNE requests that it and USEPA seek a modification of the consent decree to allow implementation of an alternative abatement system in lieu of that recommended by York Wastewater in its July 23, 1983 report.

As set forth in somewhat greater detail in my letter of August 18, 1983, the system proposed by York to comply with the performance standard of paragraph 12 of the consent decree at the location required by the consent decree, is an active pumping system requiring the removal of large quantities of water for treatment and discharge. An active system was not contemplated by SRSNE at the time it negotiated the decree because preliminary engineer-

EXHIBIT 1

ing from SRSNE's consultants at the time indicated a passive system could be made to meet the requirements of paragraph 12 in that location, i.e. on the City of Southington property. York's task was to consider only the requirements of paragraph 12 at the location specified. However, when SRS was informed by York that only an active system would meet the required standard, it asked York to consider the alternative of such an active system in an area of higher concentration of pollutants, namely the area around wells TW7 and TW7B on the Cianci property.

York has performed a preliminary comparison of a system based on two large volume wells, a till well and outwash well, pumping in the vicinity of TW7 and TW7B. Based upon sampling data from USEPA and that obtained by York in August, 1983, York reported relative contaminant capture between the two systems. These preliminary calculations demonstrate that whereas the consent decree location would yield contaminant capture of slightly over two pounds per day pumping approximately 100,000 gallons per day, the alternative system would yield over 250 pounds per day (initially) while pumping 72,000 gallons per day.

There are several benefits to the alternative system in lieu of the consent decree system. The consent decree is based on the theory of a pollutant migration barrier, rather than active removal of the contaminants in the groundwater on the Cianci property. As such, the water in the location specified is of generally good quality, indeed near the "cutoff" standards of the consent decree. This was not of material consequence if the system is passive, as no one seriously contemplated physically removing or dismantling the system just because cutoff conditions were met. However, in an active system requiring large power and treatment capacity, it is to SRS's advantage to shut off the system when cutoff conditions are met. Because the main body of contaminants are not being removed by the system, however, the system would have to be turned on and turned off over the years if shut off conditions were met and then exceeded by migration of contaminants from the north. The alternative system in the area of greatest concentration, achieves a pollutant removal estimated at over 100 times the rate of the consent decree location. This provides an obvious environmental benefit and should secure a "clean-up" in shorter time than that presently required.

Provided prompt access to the Cianci property could be obtained, York is prepared to undertake additional soil borings in the vicinity of wells TW7 and TW7B to determine subsurface starta, to perform a pump test in the till/bedrock zone and glacial outwash area to determine aquifer parameters necessary for sizing

of the recovery wells, and to perform additional ground water samplings as part of an ongoing program to monitor ground water quality in the area of concern. By October 31, 1983 SRSNE can submit an engineering report of the recommended alternative for a groundwater recovery and treatment system on the Cianci property similar in scope to the July 23, 1983 report as required by paragraph 12 of the consent decree.

It is not possible at this time to determine an exact schedule for the installation and completion of the system once approved, but inasmuch as the location and installation of recovery wells is less complicated than the construction anticipated by the July 23, 1983 report, one can predict with some confidence that whatever the time that would have been required under the consent decree system would be shortened.

It is our understanding that if the foregoing proposal meets with your approval (you indicated preliminarily that it does at our meeting of August 23, 1983) we would jointly petition to modify the consent decree to reflect the alternative system as proposed, and to make appropriate changes in the language of the consent decree so as to preserve the substance of it, accommodating ourselves to the performance criteria of the newly-proposed system.

Because the July 23, 1983 report was not submitted to you until August 18, 1983, and is therefore "late" under the schedule set forth in the consent decree, you have also requested our position with respect to approximately $9,000 of stipulated penalties pursuant to the consent decree. As we advised you by letter, the report could have been available in a timely fashion, but because management felt that it was not an environmentally sound proposal at that point it requested additional time. Under these circumstances, we think the imposition of these penalties is not productive. The company is not rejecting out of hand the payment of $9,000, and would like to have the issue reconsidered. The company is prepared to pay the $2,500 penalty assessed with respect to the delays in completing its Part B Application. We would request that the $9,000 penalty be held in abeyance at this time until such time as the joint petition is submitted to the Court. If it cannot be worked out at a later time, the company is amenable to having the Court consider whether penalties are warranted.

I should hasten to add, so there is no question with respect to the running of additional penalties, that on August 23, 1983 we advised you that the company was prepared to implement the

August 29, 1983

York report of July 23, 1983, and that you should consider the report as having been submitted to you without reservation as of August 23, 1983.

Very truly yours,

Michael L. Rodburg

MLR:enf

cc: Mr. Joel Blumstein
Suzanne Langile, Esq.
Mr. Carlton H. Boll

0015452

Copy MLR CHB YWC LEA

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION I

J. F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203

September 23, 1983

Mr. James Hulm
Vice President
Solvents Recovery Service of
New England
Lazy Lane
Southington, Connecticut 06489

Re: U.S. vs. Solvents Recovery Service of New England (SRSNE)
Consent Decree - Paragraph 8, U.S. EPA Comments

Dear Mr. Hulm:

This letter is sent pursuant to paragraph 14 of the above referenced Consent Decree in response to the engineering report entitled "Multipoint Shallow Well Groundwater Recovery System" dated June 23, 1983 submitted by SRSNE under paragraph 8 of the Decree entitled "Program for Abatement and Containment of Groundwater Pollution at and in the Immediate Vicinity of SRSNE.

The information submitted by SRSNE was timely, but does not comprehensively address all of the requirements of paragraph 8 of the Decree, and therefore, we find the report unacceptable in its present form. In order to correct the deficiencies, SRSNE should submit a revised report within 30 days of receipt of this letter which addresses the comments set out below:

1) A major shortcoming of the report is the ommission of information concerning the projected zone of influence of the groundwater recovery system. This issue was discussed at length during the settlement negotiations. While EPA recognizes the complexity of determining the precise shape of the drawdown due to the non-homogeneous stratigraphy at the site, we believe that a "target" cone of influence must be identified and established based upon projected well construction and varied pumping rates. Associated with this, there must be an engineering analysis to determine the optimum sizing, location and spacing of the individual well points.

2) EPA and its contractors have consistently felt that each well must be designed to be individually sampled by manual techniques before mixing in the header. The objective of this sampling is to provide data which can be used to adjust pumping rates of the individual wells of the groundwater recovery system in order to address the areas of heaviest contamination.

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EXHIBIT 2

3) There is no redundancy in pump capacity. The concept of using two separate header systems for the groundwater recovery system is sound; however, each pump is designed to handle only half of the projected system load. In order to insure continuous drawdown in the event of pump failure, there should be either a third standby pump or each of the two proposed pumps should have the capacity and valving to handle at least 80% of the full load.

4) Some effort should be made to check the adequacy of PVC as a material of construction for wells where solvent concentrations in groundwater are in the "percent" range. This system must be designed to last at least five years and should consider stainless steel well screens and threaded joints in this regard.

5) There is some inconsistency in the suction pump specification. Page 10 of the engineering report shows a design discharge pressure of 50 psi and page 12 of Appendix B shows 30 psi.

6) A list of existing monitoring wells which will be part of the hydraulic verification system should be given and the number, location, size, depth, and design of any new wells which will be part of the verification system should be more clearly identified.

7) The equipment and methods which will be used to measure water table elevations at each monitoring point should be discussed.

8) The approach which will be used for reporting hydraulic performance (e.g., tables, drawing depicting cone of influence) as required under paragraph 8E of the Decree should be detailed.

9) Paragraph 8D of the Consent Decree requires that the groundwater system be operated continuously. In order to verify this and to monitor the system flow, a tamper-proof flow totalizer should be installed in the water line between the header system connecting the well points and all downstream receivers. Flow volume should be periodically reported and the total annual volume of groundwater recovered should not be allowed to drop below 95% of design.

Pump all heads there

10) The proposed sampling protocols should be identified in accordance with the Consent Decree and an appropriate Quality Assurance/Quality Control program identified.

Should you have any questions concerning the above comments, please contact Joe DeCola at (617)223-5766, or Barbara McAllister at (617)223-5775, the technical staff presently assigned to this case.

Sincerely,

John R. Moebes, Chief
Waste Response & Compliance Branch

cc: Suzanne Lagille, Esq.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
J. F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203

October 6, 1983

Mr. James Hulm
Vice President
Solvents Recovery Service
of New England
1200 Sylvan Street
Linden, NJ 07036

Re: U.S. v. Solvents Recovery Service of New England:
Consent Decree - Paragraphs 12 and 13

Dear Mr. Hulm:

This is in response to Mr. Michael Rodburg's letter to me, dated August 29, 1983.

The EPA Region I agrees that the parties should seek to modify paragraphs 12 and 13 of the Consent Decree to allow implementation of an alternative active abatement system in lieu of that recommended by York Wastewater in their report "Engineering Report for Off-Site Groundwater Interceptor System Hydraulic Performance Verification System and Final Connecticut DEP Permit Application," dated July 23, 1983. EPA is now in the process of drafting language to modify paragraphs 12 and 13, and will send this to you by mid-October. After your review of the language, EPA would like to meet with you and the intervenors to discuss the performance criteria of the newly proposed system and the specific language for paragraphs 12 and 13. However, you should be aware that our preliminary opinion is that a pumping rate of 50 gpm may be inadequate to meet EPA's remedial action response objectives. Additionally, we are concerned about the feasibility of access to the Cianci property. Much of the work you propose to do depends on prompt access to the Cianci property which, we understand, is for sale. Access to that property must be assured if SRSNE's suggested off-site remedy is to be feasible.

Because EPA Region I and SRSNE have tentatively agreed to modify the Consent Decree, EPA proposes to postpone our review of the July 23rd report pending agreement on an appropriate alternative off-site system. Pursuant to paragraph 14(c) of the Consent Decree, EPA would ordinarily have to provide any comments on the YWC report by October 23, 1983. We believe it is appropriate that our technical review of the submittal be held in abeyance since this report does not necessarily represent SRSNE's final design.

EXHIBIT 3

Finally, in the letter of August 29th, the issue of stipulated penalties was also discussed. EPA's position is that SRSNE is required to pay $9,000 in stipulated penalties for failure to submit the engineering report for the off-site system by July 23, 1983. In addition, SRSNE is required to pay $38,500 in stipulated penalties for failure to submit in a timely manner the engineering report for on-site facility improvements pursuant to paragraph 7 of the Decree. That report, due July 15, 1983, was submitted to EPA on September 20, 1983. If an acceptable agreement on stipulated penalties cannot be reached prior to presenting Consent Decree modifications to the Court, EPA intends to seek such amounts through the Court.

Should you have any questions about this letter, please notify Barbara McAllister, the technical contact presently assigned to this case at (617)223-5775. We will contact you to arrange a meeting date to discuss modifications to the Consent Decree.

Sincerely,

John R Moebes

John R. Moebes, Chief
Waste Response & Compliance Branch

cc: Mr. Joel Blumstein, Esq. EPA Reg 1 (7)
Ms. Sheila Jones, Esq. " "
Mr. David Kelly, Esq. ~~EPA~~ Sent Bd of Selectmen
Ms. Suzanne Langille, Esq. CTE (7)
Mr. Michael Rodburg, Esq.

0015457

SOLVENTS RECOVERY SERVICE
OF NEW ENGLAND, INC.

P. O. BOX 362
SOUTHINGTON, CONN. 06489

PHONE: (203) 628-8084

October 17, 1983

Mr. John R. Moebes, Chief
Waste Management Division
Waste Response Compliance Branch
USEPA - Region I
J. F. Kennedy Building
Boston, Massachusetts 02203

Re: U.S.A. v. Solvents Recovery Service of New England, Inc. Consent Decree
Paragraphs 12 and 13

Dear Mr. Moebes:

This letter is in response to your letter of October 6, 1983. It is fair to say that our experience thus far with USEPA - Region I in the implementation of the consent decree and in the processing our Part B application has not been a good one. Solvents Recovery Service of New England, Inc. is a small company with a small facility. We have operated at a loss for nearly two years. We have had to contend with the engineering of the shallow well system, the major plant reconstruction, the intercept system, the Part B permitting, the Connecticut DEP demands which are in many respects inconsistent with the USEPA demands, and very substantial other claims and demands upon the company's quite limited resources.

The often rigid and hypertechnical demands made by your agency upon us over the last months have strained our resources to their limits. We thought that in retaining highly qualified consultants and in dedicating ourselves to the task at hand, we could work with you in a cooperative spirit and accomplish our mutual goals. Your insistence on extreme penalties, despite our good faith efforts, the threats to relieve us of interim status, and, in your most recent correspondence, your apparent unwillingness or inability to even now temper your demands for penalties leads us to conclude that no useful purpose would be served in attempting to modify the consent decree.

The proposed modifications to the consent decree would only marginally benefit SRS New England, while being of substantial benfit to the environment. However, it is clear from your letter

EXHIBIT 4

of October 6, 1983 that it will require enormous time and energy to negotiate modifications to the consent decree, to seek and obtain access to the Cianci property, and to perform the additional testing and engineering work which will further strain the resources of the company and divert its attention from the Part B permitting process, the plant reconstruction, and all other aspects of compliance with the order. We believe it is vital that we devote all of our efforts to these tasks so as to satisfy all your requirements. Accordingly, SRS New England does not seek to modify paragraphs 12 and 13 of the consent decree to allow implementation of any alternative abatement system. You should begin your review of the July 23 report as submitted.

With respect to penalties, we hereby offer you the sum of $10,000 stipulated penalties in full satisfaction of all penalties for violations of the consent order to date. We think any additional assessment would be counter-productive and punitive, and, accordingly, if you are not satisfied with that sum, we suggest you invoke the procedures available to you through the courts.

Very truly yours,

James R. Hulm

James R. Hulm
Vice President
jrh:k

cc: Joel Blumstein, Esq.
Sheila Jones, Esq.
David Kelly, Esq.
Suzanne Langille, Esq.
Michael Rodburg, Esq.

bc: C.H.Boll
R. Hall
S. Kellogg
J. McGlennon

0015459

SOLVENTS RECOVERY SERVICE
OF NEW ENGLAND, INC.

P. O. BOX 362
SOUTHINGTON, CONN. 06489

PHONE: (203) 628-8084

October 27, 1983

Mr. John Moebes, Chief
Waste Response & Compliance Branch
United States Environmental
Protection Agency
Region I
J.F.K. Federal Building
Boston, Ma. 02203

re: U.S. vs Solvents Recovery Service of New England (SRSNE) Consent Decree - Paragraph 8, U.S. EPA Comments Dated September 23, 1983

Dear Mr. Moebes:

In response to your letter dated September 23, 1983 containing comments for the "Multi-Point Shallow Well Groundwater Recovery System", Solvents Recovery Service of New England respectfully offers the following.

We are enclosing three (3) copies of our revised Engineering Report for the Shallow Well Groundwater Recovery System dated October 20, 1983. Also included are three (3) copies of the revised Appendix B containing the Final Design Plans and Specifications.

SRSNE appreciates your acknowledgement that the report was submitted in a timely fashion, and we have made modifications to the Engineering Report and associated drawings to reflect the comments forwarded by EPA Region I.

Implementation of the changes as proposed by EPA in the September 23, 1983 letter has resulted in an increased capital cost for installation of the system. Many of the changes, while not specifically mandated by the EPA/SRSNE Consent Decree, have been made to facilitate ease of monitoring the system as requested by EPA. The design as presented for the shallow well system provides all of the hardware to meet the objectives stated in the Consent Decree and the Engineering Report. All pumps, piping, and well points have been sized to provide increased pumping rates in the field should aquifer parameters dictate that this is necessary to meet the projected cone of influence.

EXHIBIT 5

SRSNE has, through revision of the Engineering Report and associated Plans and Specifications, addressed the ten (10) specific comments referenced in the September 23, 1983 letter. To facilitate documentation of incorporation, we are also presenting a point-by-point response to each of the ten (10) comments presented by the EPA.

1) Regarding the comment on projected cone of influence of the groundwater recovery system, we have provide a series of calculations in our Engineering Report to address projected cone of influence and groundwater table drawdown. In addition, Engineering Drawing Nos. 2 and 3 in Appendix B to the Report were revised to reflect the target cone of influence. All engineering analyses and drawing revisions will adequately address point No. 1. Approximate groundwater contours have been projected based upon theoretical analysis of groundwater withdrawal, however, actual field contours may be modified somewhat due to horizontal variation and lithology.

2) With respect to sampling each individual well for the purpose of adjusting pumping rates, we offer that the present design of the shallow well points will allow for manual sampling through the annular space between the individual well screen/casing and the suction drop pipe. Our engineer has modified the well point detail on Engineering Drawing No. 2 in Appendix B to provide better access for both manual sampling and level detection. The improved design allows for direct sampling and level measurement through a 1" diameter drop pipe installed in the center of the 2-1/2" well screen/casing from which the suction will be directly applied. This detail has been incorporated, although it is not required by the Consent Decree.

3) Redundancy in pumping capacity has been addressed in the existing design. Each shallow well jet pump is specified to handle up to 790 gallons per hour at 25' of suction lift and 30 psi of discharge head, thereby proving up to a 1 gpm pumping rate for each well. This flow represents over three times the anticipated pumping rate required to maintain the target cone of influence (estimated to be 0.3 gpm per well). In order to achieve even greater flexibility and standby capability in the system, our engineer has provided for interconnecting the piping on the suction side of both pumps to allow either pump to operate in the event of a pump failure. In the opinion of our engineers, this is more than adequate standby capacity.

4) With respect to the utilization of PVC as the material of construction, we offer that well screens, related pipings, and fittings will utilize the following materials:

- o Well Screen - Stainless Steel
- o Well Casing and Drop Pipe - Schedule 40 Carbon Steel
- o Buried Suction Pipe - Schedule 40 Carbon Steel
- o Ball Valves - Stainless Steel

These changes have been reflected on the design drawings and in the technical specifications.

5) The Engineering Report has been modified to indicate consistency with the Specifications. The flow rates as originally reported in both the Engineering Report and the Specifications were correct, however, they were at different discharge pressures (30 psi and 50 psi).

6) With respect to existing monitoring wells which will be part of the hydraulic verification system, our engineer has added a significant amount of additional text to the Engineering Report specifically addressing number, location, size, depth, and design of new wells required by the Consent Decree.

7) The equipment and methods which will be used to measure water table elevation at each monitoring point are addressed in the Specifications. The Specifications call for an "M-Scope Water Level Indicator" to be furnished by the contractor for the owner's use in determining the actual levels in each monitoring well and well point (page 11, paragraph 4.1-0d).

8) The approach which will be utilized for reporting hydraulic performance, including tables and cone of influence, has been addressed in detail in the revised Engineering Report.

9) With respect to the suggestion for installation of flow monitoring on the system, our engineer has provided for a turbine-type conventional water meter for installation on the common discharge line of the two well pumps. The water meter will be a Hershey Model MVR-50 standard length, and will be of tamper-proof construction.

With respect to the suggestion that the total recovered annual volume of groundwater being greater than 95% of design, we offer that this requirement will be impossible to comply with. It is recognized that the system is operated continu-

ously, however, the throttling and control of specific well points will be governed by the localized groundwater drawdown in a particular area. The actual design flow for the system is of limited relevance. SRSNE will strive to maintain the projected cone of influence, and will coordinate with the EPA in operating the system to meet that objective. It is offered that total annual volume of groundwater recovered could vary significantly, depending upon precipitation received in any particular year, and therefore cannot by definition be regulated as a requirement for the system.

10) Regarding proposed sampling protocols identified in accordance with the Consent Decree, our engineer has generated the necessary text to address this item in the revised Engineering Report. A significant amount of detail was presented in the original Engineering Report, and this was expanded to address your request.

The key additions to the Engineering Report, Plans and Specifications has been the addition of a projected cone of influence for the groundwater recovery system and associated engineering and hydrogeological calculations to confirm optimum sizing, location, and spacing of individual well points. While SRSNE felt comfortable with the original Engineering Report as presented, we have incorporated the changes requested by the Environmental Protection Agency with respect to materials of construction, monitoring, and presentation of additional data.

Very truly yours,

James R. Hulm.

James R. Hulm
Vice President
jrh:k
cc: C. Boll
S. Kellogg, P.E.
J. Loureiro, P.E.
K. Warner, P.E.
M. Rodburg, Esq.
B. Armet, P.E.
S. Langille with Attchms

0015463

cc MLR
YWC
CHG

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION I

J. F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203

November 28, 1983

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. James Hulm
Vice President
Solvents Recovery Service
of New England
1200 Sylvan Street
Linden, NJ 07036

Re: U.S. v. Solvents Recovery Service of New England (SRSNE)
Consent Decree: Paragraphs 12 and 13

Dear Mr. Hulm:

This letter is sent pursuant to paragraph 14 of the above referenced Consent Decree. It is in response to the "Engineering Report for Off-Site Groundwater Interceptor System, Hydraulic Performance Verification System, and Final Connecticut DEP Permit Application," dated July 23, 1983.

EPA has concluded that the interceptor and hydraulic verification system design outlined in the report is acceptable for purposes of achieving the performance standards established by paragraph 12 of the Consent Decree. However, there are several areas of the report that need clarification. These areas, outlined below, must be addressed in the final engineering report, which you are required to submit within ninety (90) days of receipt of this letter.

EPA's first concern focuses on the aquifer parameters used for the system design. In the July 23rd report, York Wastewater Consultants, Inc. (YWC) noted on pages 26 and 27 that:

> "It should be emphasized that the components of the groundwater recovery system and their individual operational rates are based upon aquifer characterization data developed by Wehran and Warzyn during previous site investigations. This data is for the most part reliable, however, an extensive water level monitoring program is planned during the preliminary operation of the system. Site specific groundwater measurements collected during the start-up of the system will be used to calibrate and refine the pumping rates. Estimated operating rates described in succeeding sections of this report may be modified based upon actual system performance."

EXHIBIT G

Further, on page 20 of the report, YWC noted that a wide range of in-situ permeabilities was found in the wells screened in the outwash with some estimates as high as 10^{-1} cm/sec. YWC assumed an average permeability of 5×10^{-2} for the design of the interceptor system.

EPA acknowledges that it is a good idea to calibrate and refine pumping rates during start-up of the system. However, EPA is concerned that the installed system may not have the proper flexibility to permit any needed field modifications if it is designed based on flow rates derived from an average permeability value. Therefore, SRSNE should take either one of the following two approaches in order to ensure that the system meets the performance specifications of the Consent Decree:

1) Perform aquifer testing to determine hydraulic characteristics in the actual location of the proposed system prior to its design and use this data for purposes of design; or

2) Design the system to handle the highest possible water flow rate. Good engineering practice dictates that the system be designed for the worst-case conditions in the absence of a good data base. Such a system should ensure the proper number, size and location of wells/pumps, the proper sizing of all transfer piping, and adequate treatment system capacity. At a minimum, SRSNE should provide EPA with a projected range of pumping rates and identify system components which would be sensitive to pumping rate changes.

Secondly, EPA is concerned that we are unable to reproduce your calculated influence of the recovery wells based on the assumptions and methods outlined in the July 23rd report. Therefore, we request that all of the documented assumptions and calculations be provided for EPA review in your final report. Specifically, the statement on page 29 that "... the outwash recovery well is projected to have a specific capacity of 24 gpm/ft. of drawdown, and should produce a 0.5 ft. drawdown at the river under a pumping rate of 50 gpm" must be supported. EPA's position that the July 23rd report meets the intent of the Consent Decree assumes that SRSNE will be able to support this statement to our satisfaction.

Finally, EPA questions whether SRSNE considered multiple outwash wells along the interceptor system line pumping at lower rates as an alternative to a single well. This approach would maximize the influence of the system along the line and would permit greater flexibility for field modifications should they be required as a result of the 90 day test period.

Should you have any questions concerning the above comments, please contact Barbara McAllister at (617)223-5775.

Sincerely,

John R. Moebes, Chief
Waste Response and Compliance Branch

cc. Suzanne Langille, Esq.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
J. F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203

0015466

DEC 19 1983

CERTIFIED MAIL-
RETURN RECEIPT REQUESTED

December 16, 1983

Mr. James Hulm
Vice President
Solvents Recovery Service
of New England
1200 Sylvan Street
Linden, NJ 07036

Re: U.S. v. Solvents Recovery Service of New England (SRSNE): Consent Decree -- Paragraphs 8-11

Dear Mr. Hulm:

This letter is sent pursuant to paragraph 14 of the above referenced Consent Decree. It is in response to the revised engineering report for the shallow well groundwater recovery system, dated October 20, 1983, and accompanying cover letter, dated October 27, 1983.

The information submitted by SRSNE was timely and addressed the majority of EPA's concerns which were outlined in our letter to you dated September 23, 1983. Therefore, this submittal meets the requirements of the Consent Decree. Pursuant to paragraph 8 of the Consent Decree, the EPA therefore expects SRSNE to commence operation of the shallow well groundwater recovery system within 12 months of receipt of this letter.

The EPA is, however, concerned about the hydraulic verification system and the location of the upgradient monitoring wells discussed in your report. These concerns and specific changes to remedy them are outlined below. They were also discussed with you and your consultants in our meeting of November 30, 1983, in Southington. EPA's position that the revised report meets the intent of the Consent Decree assumes that SRSNE can demonstrate to EPA that every effort has been made to address these concerns.

The effectiveness of the proposed groundwater recovery system relies entirely on the projected cone of depression. To ensure that an acceptable cone of depression is actually developed and maintained, SRSNE needs to install an adequate number of accurately located and properly constructed water table piezometers. These piezometers should be located within the conservatively estimated influence of the system and

EXHIBIT 7

spaced to ensure influence in areas where off-site contaminant plume migration may occur. The most useful piezometers are those screened over a wide interval which encompasses the maximum fluctuations in the water table. Of the 17 wells specified on page 18 of the October 20th revised report, TW-8A, TW-11, WE-5, SRS-2, DN-1, DN-2, and DN-3 meet this criterion. The remaining wells supplement this data and help define vertical gradient.

SRSNE should take the following steps to improve the existing hydraulic verification system:

° Relocate wells DN-1, DN-2, and DN-3 as shown on the attached Figure 1 to provide for a broader area for both hydraulic performance verification and water quality measurement.

° Install an additional water table piezometer in the northeast portion of the cone of depression, as shown by well HP-1 on Figure 1.

° In conjunction with EPA and its consultants, agree on the approximate locations of all new monitoring wells in the field and mark these locations with surveyor's stakes or other devices.

° Develop a monitoring program to include initial static water level measurements under non-pumping conditions in both on-site and off-site wells, including the well points themselves. Additionally, the proposed off-site interceptor system should not operate during these initial measurements. Subsequent measurements under well-point pumping conditions will best reflect the developing cone of depression induced by the on-site recovery system.

Finally, the EPA is also concerned about the location of the upgradient monitoring wells. As proposed in the revised report, UP-1 is much too far north and east to be upgradient of SRSNE and UP-2 is too far north. To fulfill the intent of the Consent Decree, SRSNE should change the proposed locations of the upgradient monitoring wells UP-1 and UP-2 to the approximate locations shown on Figure 1. At a minimum, UP-1 must be moved farther west.

From EPA's conversations with you and your consultants, we understand that the proposed locations of wells DN-3, UP-1,

and UP-2 were chosen so as to avoid problems with obtaining access to private property. EPA understands that SRSNE may be unable to change the wells to the locations indicated on Figure 1 because access cannot be arranged. If SRSNE finds it is unable to install UP-2 and DN-3 at the indicated locations because of difficulties in obtaining access, you must notify EPA in writing by January 31, 1984. Included with your letter must be documentation that an effort was made to obtain access, e.g., copies of correspondence with property owners. In summary, EPA expects SRSNE to notify the Agency in writing by the end of January if any of the steps outlined above to improve the groundwater monitoring program cannot be implemented.

Should you have any questions about these comments, please contact Barbara McAllister at (617)223-5775.

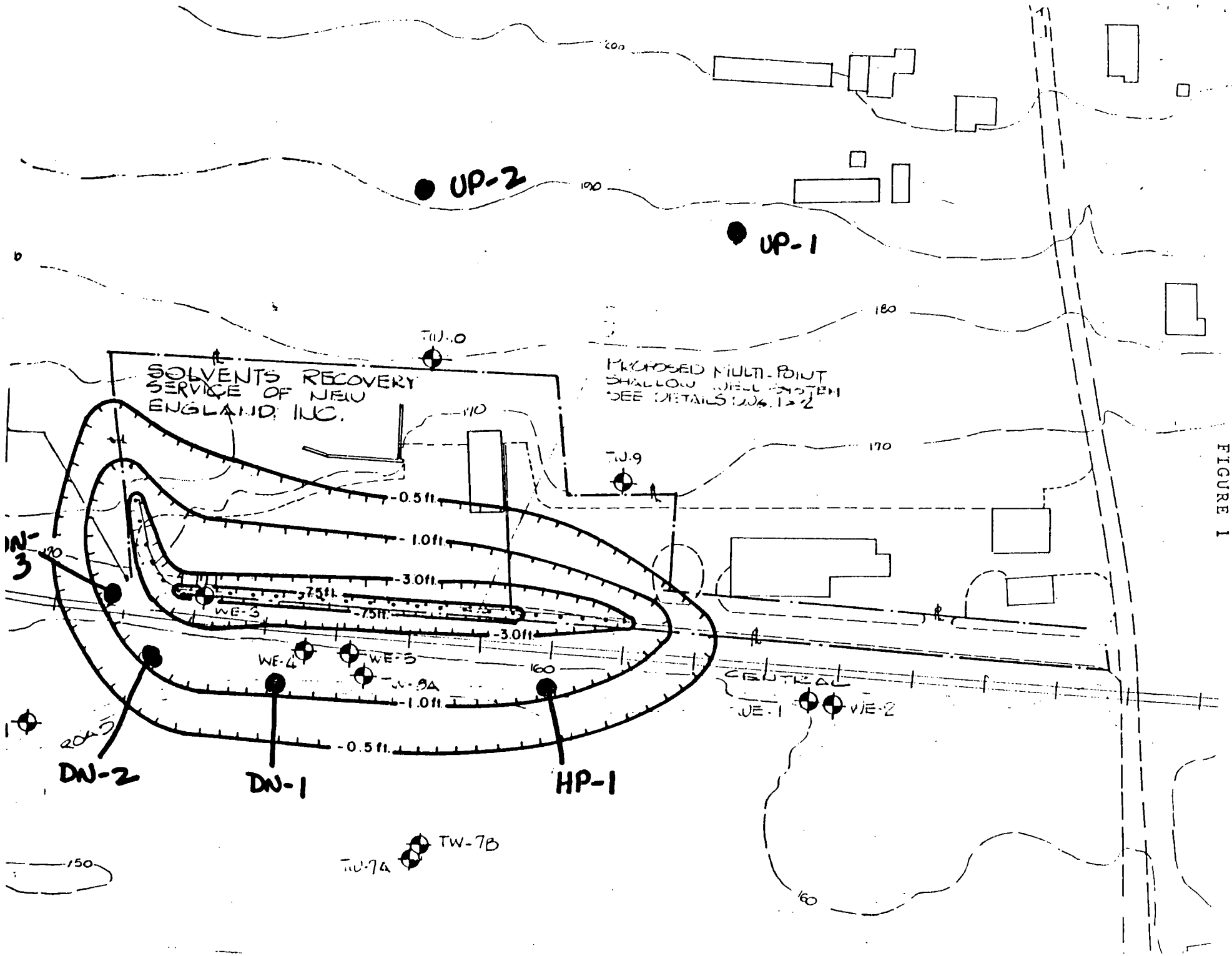
Sincerely,

John R. Moebes

John R. Moebes, Chief
Waste Response & Compliance Branch

Attachment

cc: Suzanne Lan[illegible]le, Esq.


UP-2
UP-1
200
190
180
170
160
150
TW-0
TW-9
TW-7A
TW-7B
SOLVENTS RECOVERY SERVICE OF NEW ENGLAND INC.
PROPOSED MULTI-POINT SHALLOW WELL SYSTEM SEE DETAILS 204.1 & 2
-0.5 ft.
-1.0 ft.
-3.0 ft.
-7.5 ft.
WE-3
WE-4
WE-5
WE-5A
DN-2
DN-1
HP-1
DN-3
VE-1
VE-2
FIGURE 1
0015469

0015470

SOLVENTS RECOVERY SERVICE
OF NEW ENGLAND, INC.

P. O. BOX 362
SOUTHINGTON, CONN. 06489

PHONE: (203) 628-8084

January 13, 1984

Mr. John R. Moebes, Chief
Waste Response & Compliance Branch
US EPA Region 1
J.F. Kennedy Federal Bldg.
Boston, Massachusetts 02203

Re: US v SRSNE
Consent Decree - Paragraphs 8-11

Dear Mr. Moebes:

We have your letter of December 16th in which you acknowledge our timely compliance with the Consent Decree in regard to the shallow well system. You go on to say that you expect the system to be in operation within 12 months of our receipt of your letter. While the Consent Order, in this regard, does not recognize the controlling requirement of a discharge permit from the State of Connecticut, the fact remains that we cannot operate the system until Connecticut has granted a NPDES permit.

I am attaching a copy of a letter addressed to our consultants by Mr. Stan Alexander of the Connecticut DEP in which he raises a number of questions and notes that these are only his "initial comments." He also notes his request to Mr. Paul Marin for a review of the adequacy of the system from a hydrogeologic point of view.

While we have your approval to continue with engineering design, proicurement and installation on the stystem as proposed, we see no commitment on the part of the Connecticut DEP to the same proposal. In fact, it appears from their letter that they intend to conduct a completely independent review and may arrive at conclusions that differ from yours.

We believe that, as of now, it is still possible to meet a December 19th, 1984 date for completion of this project as now defined. We find ourselves, however, caught between our anxiety to comply in all respects with the EPA and the Consent Order, our need to avoid not only the fact but the appearance of conflict with the Connecticut DEP and our need to direct our limited resources to those projects where we are not exposed to waste and duplication of effort. While there is still time to meet the

EXHIBIT 8

Consent Decree deadline, will you please resolve with the State of Connecticut that our proposal is acceptable. Until Connecticut does this, it would be fiscally irresponsible for us to continue work on the system.

Also attached to this letter is a copy of our letter to Messrs. Cianci and Delahanty requesting access to your suggested monitoring well locations. We believe you have Federal authority to compel this access. We hope that that will not be necessary, however, in the event that this request is denied, we will look to you for direction.

I firmly believe that we are all headed in the same direction - the construction of a modern, effective, environmentally sould facility. We are anxious to get going, not only with the groundwater remediation but with the long overdue upgrading of the plant. The trigger point in all of these actrivities is issuance of a Connecticut NPDES permit. Please help us.

Very truly yours,

James R. Hulm

James R. Hulm
Vice President
jrh:k

ENGINEERING DIVISION

Copy RHH MCR 3/7/86

December 19, 1984

Mr. James R. Hulm
Vice President
Solvents Recovery Service
of New Jersey, Inc.
1200 Sylvan Street
Linden, NJ 07036

Subject: Downgradient Well Discussions With EPA

Dear Jim:

Pursuant to your request, I am enclosing my recollections of a conversation held with Barbara McAllister on December 11, 1984 and Paul Exner on that same date.

I called Barbara and indicated that while we agree with the proposed locations for the downgradient monitoring wells and were continuing to pursue approval for these locations, the liklihood of siting the wells at the proposed locations was minimal. Corrsepondence with downgradient property owners (Delahanty and Cianci) have indicated that there is little or no chance they will approve the monitoring wells. After conveying this information to Barbara Mcallister, it was agreed upon between Barbara and me that EPA representatives and YWC would field locate the downgradient wells to the best of our ability to attempt to satisfy EPA, while not selecting a location with minimal liklihood of approval.

Subsequent to my discussion with Barbara, I received an after hours telephone call from Paul Exner. Paul and I discussed the proposed downgradient monitoring locations at length, and Paul acknowledged that the best locations were on the Delahanty and Cianci property. While Paul and I discussed alternative locations, none could be found that satisfied him and his interpretation of the EPA/SRSNE Consent Decree. The way it was left with Paul was that Paul would recommend to Barbara that EPA issue an Order to Delahanty and Cianci to allow siting of the downgradient monitoring wells. Otherwise, the wells would be located in the field on the SRSNE property, with one possible well located on the corner of the Southington Water Company property, but off of the Delahanty and Cianci property.

EXHIBIT 9

In both conversations (with Barbara and with Paul), all parties agreed that the project should not be held up by the downgradient monitoring well locations, and that EPA's approval of the on-site shallow well system should not be contingent upon locating the downgradient monitoring wells in the proposed locations.

It is presently my opinion that the most meaningful solution would be the location of one downgradient monitoring well as close as possible to the Cianci and Delahanty property lines in the corner of the Southington Water Company property, as well as one or two on-site wells located at or near the anticipated 1' drawdown contour line upgradient of the shallow well system. While the wells would not be downgradient, they would give EPA some indication of how well the on-site shallow well groundwater recovery system was operating in terms of drawdown.

Please do not hesitate to contact me if you have any questions or require further clarification.

Very truly yours,

Brian W. Armet Co

Stephen R. Kellogg, P.E.
President

SRK:cg

cc: B. W. Armet, P.E.

United States
Environmental Protection
Agency
Region I

Office of
Public Affairs
John F. Kennedy Federal Building
Boston, Massachusetts 02203

Maine
Massachusetts
New Hampshire
Rhode Island
Vermont

EPA Environmental News

For more information call David Webster (617) 223 4909 Project Officer
David Pickman (617) 223 5752 Public Affairs

May 21, 1985

CONSTRUCTION OF WELLS COMPLETE AT SOUTHINGTON HAZARDOUS WASTE SITE

BOSTON -- Completion of the first phase of a groundwater cleanup system at the Solvents Recovery Service of New England (SRS) facility in Southington, CT, was announced today by the U.S. Enviromental Protection Agency.

Operation of the groundwater treatment system will begin when SRS obtains a permit from the Connecticut Department of Environmental Protection (DEP) for discharge of treated groundwater to the Quinnipiac River.

Twenty-five shallow wells have been installed on the eastern and southern property lines of the SRS site to contain groundwater pollution in the vicinity of the site. The recovered groundwater will be pumped through an air stripper to remove volatile organic contaminants, then discharged to the Quinnipiac River.

SRS must demonstrate that the discharge will not adversely affect any uses of of the Quinnipiac. The State discharge permit is pending, and there have been several extensions of the comment period on the permit application. In addition, both the Town of Southington and SRS have requested further opportunity to review the permit.

The work was completed May 20 by contractors to SRS working under supervision of EPA and the U.S. Army Corps of Engineers. Installation of the on-site groundwater recovery system was done under a 1983 consent decree which requires SRS to recover and treat contaminated groundwater on and off site and to improve on-site storage and management of hazardous waste. Off-site groundwater recovery and treatment remains to be installed.

The parties to the 1983 consent decree are EPA, SRS, The Southington Board of Water Commissioners and the Connecticut Fund for the Environment.

SRS has been recovering organic solvents by distillation at this facility since 1955. Wastes from the distillation and recovery process were stored and disposed of on 12 acres west of the Quinnipiac River until the mid 1960s. SRS waste has been linked to the contamination of a Southington municipal well by organic compounds.

—

United States
Environmental Protection
Agency
Region I

Office of
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John F. Kennedy Federal Building
Boston, Massachusetts 02203

Connecticut
Maine
Massachusetts
New Hampshire
Rhode Island
Vermont

EPA Environmental News

December 20, 1985

For more information call David Webster, Superfund (617)223-4909
Kate Connolly, Public Affairs (617)223-5918

GROUNDWATER CLEANUP BEGINS AT SOUTHINGTON HAZARDOUS WASTE SITE

BOSTON --Operation of a groundwater cleanup system began this week at the Solvents Recovery Services of New England (SRS) facility in Southington, CT, it was announced today by the U.S. Environmental Protection Agency (EPA).

An on-site groundwater recovery system pumps contaminated groundwater migrating from the Solvents facility on Lazy Lane; chemical contaminants are removed in an on-site treatment system. The action fulfills a major portion of a 1983 consent decree between EPA, other intervening parties and SRS. Operation began following the issuance of a discharge permit by the Connecticut Department of Environmental Protection.

The on-site groundwater recovery system consists of 25 shallow wells which continually pump groundwater at the site's boundaries. The groundwater then passes through an on-site air stripping tower which removes volatile organic contaminants. The treated water is discharged to the Quinnipiac River.

Under the consent decree, SRS is also required to install an off-site groundwater interceptor system: a series of off-site wells on Town property between the SRS facility and two abandoned Town production wells near the Quinnipiac River. The system will intercept contaminated groundwater as it moves away from the site. This contaminated groundwater may also be treated by air stripping. Construction of the off-site system is expected to begin this spring.

The DEP's discharge permit requires SRS to monitor the groundwater treatment system's discharge and treatment efficiency and to construct a new pipe for the discharge. SRS plans to construct

-more-

the new discharge pipe, between the SRS facility and the Quinnipiac River, this spring.

The consent decree required the company to recover and treat contaminated groundwater on and off the site, and to improve on-site storage and management of hazardous wastes.

In September, EPA issued a draft permit requiring SRS to fulfill the terms of the consent decree for storage and management of hazardous wastes and to develop a plan to address contaminated soil that may remain under buildings on site after the groundwater recovery and treatment is completed. The permit was issued under the authority of 1984 amendments to the Resource Conservation and Recovery Act.

SRS has been recovering organic solvents by distillation at this facility since 1955. Wastes from the distillation and recovery process were stored and disposed of until the mid-1960's on SRS' 12 acre site located west of the Quinnipiac River. SRS waste has been linked to the contamination of a Southington municipal well by organic compounds.

-30-

SOLVENTS RECOVERY SERVICE
OF NEW ENGLAND, INC.

P. O. BOX 362
SOUTHINGTON, CONN. 06489

PHONE: (203) 628-8084

0015477

March 3, 1986

Joel Blumstein, Esq.
U.S. Environmental Protection Agency
Office of Regional Counsel
JFK Federal Building
Boston, Massachusetts 02203

Re: Off-Site Recovery System
Solvents Recovery Service of New England, Inc.
Alternate Proposal

Dear Mr. Blumstein:

Data on groundwater quality in the vicinity of the proposed off-site intercept system has been collected over the last four years and analyzed. The test wells on which this analysis has focussed are MW-1, TW-11, X, MW-7 and TW-7B. In addition samples from SRS 1, 2 and 3, MW-5 and TW-7 have been collected and analyzed.

These data have also been reviewed in light of the soil conditions at the site; conditions that were not fully appreciated in 1982. This investigation was triggered when it was noticed that the contaminant levels in the test wells along the cutoff line were declining while those in the test wells now recognized as being in the relatively low permeability till, showed little if any improvement.

The following series of wells, which have been sampled and analyzed recently are located along the cutoff line: SRS-1, SRS-2, SRS-3, X, MW-5, MW-7.

SRS-1 is a deep well with bedrock, SRS-2 shallow, at the westerly end of the cutoff line. These wells are both located in till and as the table of analyses attached shows are now, and have been with two minor excursions, below all cutoff levels. In May 1983 trichlorethylene showed at 19 ppb versus a cutoff of 15 and September 1985 1,1 dichlorethylene showed at 14 versus a cutoff of 10.

EXHIBIT 12

SRS-3 is a deep well in the outwash region that is hydraulically directly downgradient from MW-1 and TW-11. Samples taken in May 1983, September 1985 and February 1986 tested below cutoff levels in all parameters.

Well X is the test well located as required in the Consent Decree and is in the outwash region. Samples taken July 1984, April 1985, September 1985 and February 1986 tested below cutoff levels in all parameters.

MW-5 is a deep well, MW-7 shallow, at the easterly end of the cutoff line. These wells have shown a reduction in contaminant level most apparent in methyl ethyl ketone and isopropanol. Benzene at 25 ppb in MW-5 and 26 in MW-7 is the only parameters above cutoff levels, however, it was not detected in September 1985.

No analyses have been listed for trihalomethanes or 1,4 dioxane. Dioxane has not been detected in any of the samples collected. Trihalomethanes have only appeared in one sample from MW-1 at 14 ppb versus a cutoff of 100 and in TW-7B, most recently at 2,400 ppg. They have not been detected in any other well.

Contaminant levels reported in the data have been analyzed to obtain some measure of overall improvement. The method chosen was to note the number of cutoff parameter tests in the four cutoff monitoring wells MW-1, TW-11, X, MW-7. Well TW-7B was not included in this tally. The next step was to determine how many of the tests showed levels in excess of cutoff limits in each round of testing. The ratio of exceedance to total tests was plotted and is attached. While imprecise this does demonstrate an ongoing and significant improvement in groundwater quality.

The location of these test wells in relation to the proposed pumping wells is as follows:

SRS-1 and SRS-2 straddle the location of the five proposed shallow till recovery wells--see Site Plan. SRS-3 is next to proposed till recovery well east. Well X is next to the outwash recovery well and MW-5 and 7 are alongside proposed till recovery well west. The only water that the pumping system will recover that exceeds any cutoff levels is the 6 gpm from till well west or 8% of the total system.

MW-1 and TW-11 are located at approximately the till/outwash boundary. MW-1 is deep, TW-11 shallow. Both of these wells are directly upgradient of SRS-3. TW-11, the shallow well has not shown a contaminant level above cutoff in any sample taken since 1982. MW-1 which is in the till has shown a reduction in contaminant

levels since 1982. The most recent data, February 1986 showing 111 trichlorethane at 200 ppb versus a cutoff of 180. 1,1 dichlorethylene at 21 versus a cutoff of 10 and vinyl chloride at 26 versus a cutoff of 10. However, as noted earlier none of these show in SRS-3.

During the time groundwater has been improving at the cutoff line, there has been virtually no change in the quality of groundwater in the vicinity of TW-7 and 7B. These wells are located in till of low permeability and, as the data shows, remain at high levels.

It appears that if the natural flow of groundwater over the last four years has had no effect then pumping from the outwash 450 feet away across the till outwash boundary is not likely to improve matters in the foreseeable future.

Alternate Proposal

SRSNE believes that there are significant gains to be made by relocating the pump system from its proposed location to the vicinity of TW-7 and 7B. The benefits that may accrue are:

1. Withdrawing water at the known focus of contamination affords the best opportunity for a rapid cleanup.

2. The quantity of water to be pumped and, therefore, discharged to the Quinnipiac will be materially reduced.

3. The installation of such a pumping system would provide backup for the on-site recovery wells if the low permeability of the till on-site adversely affects the extent of off-site influence.

4. SRSNE believes that an arrangement with Mr. Cianci could be made that would allow the installation of small diameter force mains in the existing culvert across his land. These would have the ability to discharge all plant effluents to the Quinnipiac in hard pipe.

SRSNJ requests permission to delay start of the construction of the current proposed off-site system for 30 days to allow a review and discussion of these data with EPA experts.

Very truly yours,

James R. Hulm
Vice President

JRH:dap
Attachments

cc: JS

SOLVENTS RECOVERY SERVICE
OF NEW ENGLAND, INC.

P. O. BOX 362
SOUTHINGTON, CONN. 06489

PHONE: (203) 628-8084

May 12, 1986

Mr. David Webster
U.S. Environmental Protection Agency
Region I
J.F.K. Federal Building
Boston, MA 02203

Re: EPA/SRSNE Consent Decree, Off-Site Groundwater Recovery System-Solvents Recovery Service of New England, Inc.-Alternative Supplementary System

Dear Mr. Webster:

This letter report is intended to document activities currently ongoing with respect to installation of the off-site groundwater interceptor system at the Solvents Recovery Service of New England, Inc. site in Southington Connecticut, and to request that the Environmental Protection Agency consider suspension of installation of the large outwash well associated with this system until such time as it is deemed necessary. Specifically, SRSNE has committed to installing the off-site groundwater interceptor system as designed and approved by EPA, however, this report intends to document an alternative supplement to the approved system which will more effectively remediate the site in a timely fashion by installing an additional system of a till recovery well located downgradient of TW-7B while suspending the installation of the outwash well associated with the approved system, until such time as it may be deemed necessary.

INTRODUCTION/BACKGROUND

In previous discussions, SRSNE, and our consultants YWC, Inc., have been is contact with EPA and their consultants to discuss the concept of an alternative groundwater recovery system proposal. The alternative system proposed by SRSNE was initially

EXHIBIT 13

summarized in a letter to EPA, dated March 3, 1986, and discussed in a meeting held at EPA Headquarters in Boston, Massachusetts on March 6, 1986. At that meeting, EPA requested that SRSNE expand upon the concept of an alternative proposal in further detail.

Subsequent to initial preparations and meetings, SRSNE summarized a formal alternative proposal in a report entitled "Concept Engineering Report-Site Groundwater Interceptor System Alternative Proposal" dated March 26, 1986. This fifty five (55) page document was prepared and submitted to EPA. Subsequently, representatives of SRSNE, their consultants YWC, Inc., and ERM-Northeast, Inc. met with representatives of EPA, the Town of Southington, and EPA consultants in a meeting at EPA Headquarters in Boston, Massachusetts, on April 22, 1986. At this meeting, representatives of EPA indicated that given a choice between the alternative proposal involving capturing groundwater on the Cianci Property at the area of highest concentration versus the approved off-site system comprised of multiple till recovery wells and a large outwash well, they would select continuation of the existing approved system, as outlined in the June 22, 1984 report entitled "Engineering Report for Off-Site Groundwater Interceptor System, Addendum No. 1 to February 28, 1984 Sumbittal". In presenting their opinion, however, representatives of EPA acknowledged that the weakest component of the system originally designed and approved by EPA appeared to be a large high volume outwash well that will be pumping a large amount of groundwater that is already substantially below the EPA Consent Decree cut-off limits. Stated another way, installation of this well would result in the recovery of groundwater that was not contaminated, and would provide no benefit to precluding the southerly migration of contaminants as requested in the Consent Decree.

Specifically, representatives of EPA and their consultants suggested that some interest would be exhibited on the part of EPA to install certain aspects of the groundwater interceptor system as outlined in the March 26, 1986 alternative proposal, in lieu of the outwash well component of the approved off-site

groundwater interceptor system. It is the intent of this letter report to combine the best components of the approved system and the alternative proposal into one single system that will supplement the approved system, while suspending the installation of the outwash well which would not currently be intercepting any groundwater presenting a material conduit of contaminants to the Town of Southington wells.

Subsequent sections of this letter report will document the specifics of the SRSNE proposal, and will be presented in a format suitable for approval by EPA. It is emphasized that while this proposal in under consideration by EPA, SRSNE is proceeding with construction of the off-site groundwater interceptor system as originally designed and approved by EPA. We have scheduled the last component of the construction to be the outwash well in the event that EPA decides favorably on our proposal for installation of a till recovery well downgradient of TW-7B in lieu of the originally proposed outwash well.

GROUNDWATER QUALITY IN THE OUTWASH

An extensive presentation of groundwater quality over time at the SRSNE site was presented in the Concept Engineering Report for the alternative proposal dated March 26, 1986. Twelve (12) tables and fourteen (14) figures clearly documented certain trends in groundwater quality in the area of the off-site groundwater interceptor system. While periodic water quality readings for specific contaminants showed concentrations of specific substances above the required EPA Consent Decree cut-off limits, none of these wells were associated with the outwash. It remains the opinion of SRSNE that there is a general trend showing improved groundwater quality over time in the vicinity of the proposed off-site groundwater interceptor system. With respect to the outwash as characterized by Well Nos. X, SRS-4, and MW-8, the concentrations of all contaminants are either not detectable or negligible for all readings. Specifically, SRSNE makes references to Tables 1 through 12 as submitted in the March 26, 1986 report to verify that the water quality of all outwash wells is well below SRSNE/EPA Consent Decree limits without question. In addition, Figures 2 and 13

from the March 26, 1986 report for Well Nos. X and MW-8, respectively, are also being included as documentation of water quality in the outwash. While definitive trends of water quality in the till are interpretive at best, there is no question regarding water quality associated with the outwash. It can be clearly concluded, and has been acknowledged by other technical representatives associated with the project, that the outwash does not currently pose any concern as a conduit for transfer of contaminated groundwater in a southerly direction beyond the off-site groundwater interceptor line. Rather, problems with groundwater quality appear to lie upgradient of the intercept line in the vicinity of Well No. TW-7B. Figures 7 and 8 from the March 26, 1986 submittal for monitoring well TW-7B for total volatile organics, and methyl ethyl ketone and isopropanol clearly show that groundwater quality in the vicinity of this well contains far higher concentrations of contaminants than any other wells monitored. For this reason, it is SRSNE's specific proposal to install a groundwater recovery well downgradient of TW-7B between TW-7B and the approved off-site groundwater interceptor system line, as discussed in more detail in the subsequent section.

An illustration of the comparable effectiveness of a high volume, low concentration outwash well and a low volume, high concentration till recovery well in the vicinity of TW-7B follows. Assuming a flow of 50 gpm for the outwash well and a total TVO, MEK and isopropanol concentration of 431 ppb (the maximum concentration ever detected in Well Nos. X, SRS-4 or MW-8), results in the recovery of 0.26 pounds per day of contaminants. The same recovery of contaminants for a till well downgradient of TW-7B based upon a flow of 5 gpm and total TVO, MEK and isopropanol concentration of 798,000 ppb is 48.3 pounds per day. This is about 185 times more effective than the outwash well under worse case conditions historically.

SUPPLEMENTAL OFF-SITE GROUNDWATER RECOVERY SYSTEM

System Components

To supplement the approved off-site groundwater interceptor system, SRSNE is proposing the installation of a groundwater recovery well downgradient of TW-7B. The system will be

comprised of a well 6 inches in diameter and will be screened over the lower 20 feet of the saturated till deposits (approximately 20 to 40 feet below grade). Well screen and casing will consist of low carbon steel.

A submersible with pump will level actuator sensors and will be installed in the well. This pump will be sized sufficiently to pump over a range of 0.5 to 15 gpm. The pump will transfer the recovered groundwater through a force main directly to the approved off-site system force main.

Supplemental Till Recovery Well System Advantages

The supplemental system provides a number of advantages to off-site groundwater recovery, resulting in significantly expediting the clean-up process. The following sections will provide a description of background data used as a base in designing the supplemental system.

Directly east of the SRSNE site are glacial till deposits that extend from the surface down to bedrock, which is approximately 40 to 70 feet below grade. This stratigraphic sequence is significantly different from the area farther south from the SRSNE site where up to 50 feet of highly permeable glacial outwash deposits overlie till and bedrock. The delineation of the till deposits is based on both empirical data and interpretative analysis of collected hydrogeologic and groundwater quality sample results.

The empirical data base includes four (4) soil borings conducted by YWC between Well Nos. TW-7A and 7B and the Cianci/Southington Water Board property line. These borings encountered dense glacial till from the surface down to auger refusal at depths of up to 30 feet. (Boring locations are shown on Figure 1 from the YWC June 22, 1984 report "Engineering Report for Off-Site Groundwater Interceptor System - Addendum No. 1 to February 28, 1984 Submittal".) Additional empirical evidence includes test pumping and in situ permeability testing of numerous monitoring wells on the Cianci and Southington Water Board sites. All shallow wells south of the Cianci property can be pumped continuously at high flow

rates. Well Nos. TW-7A and 7B recharge slowly and continuous pumping at high rates cannot be sustained. In addition to the boring logs, this is a clear indication of a significant difference in formation hydraulic conductivity.

An evaluation of water table contours between the SRSNE site and Southington Well Nos. 4 and 6 shows a sharp decrease in groundwater gradients, just south of the Cianci property, (see Figure 2 of the June 22, 1985 YWC report). The Cianci property between the railroad tracks and the Quinnipiac River is relatively flat and the steeper groundwater gradient across this property cannot be attributed to topography. The steep gradient, however, is to be expected, since the geologic deposits in the area have low permeabilities. The steeper gradient is required to provide the driving force for groundwater flow through the low permeability till.

Groundwater quality analyses collected from the monitoring network between 1981 and the present, also confirm the existence of till east of SRSNE. During the period of record contaminant concentrations have decreased for all wells screened in outwash or in till overlain by outwash. In Well Nos. TW-7A, 7B and 8A, however, concentrations have decreased only slightly or not at all. These data show that the same slow steady flushing of the outwash aquifer that is occurring to the south is not taking place due east of SRSNE.

The stagnant contaminant concentrations in these wells are the product of factors. The slow rate of groundwater flow in the till is an important consideration. The till flow rate is estimated to be less than 0.1 ft/day (37 ft/year) compared to 4.1 ft/day in the outwash (see page 48 in the YWC report, dated June 22, 1984). The low till flow rate can only be applied to groundwater, however, not to contaminant migration. The other major factor producing the persistent contaminant concentrations is the high percentage of silt and clay in the till which further reduces the contaminant migration rate. Silts and especially clays increase the retardation of contaminant transport, because of the higher natural organic content and the increase in adsorbtion.

The persistence of the contaminants in the till deposits makes the area east of the SRSNE site the primary off-site contaminant source. This is particularly true, now that the on-site groundwater recovery system has hydraulically isolated any residual contamination on the SRSNE site itself. The single most important advantage of the proposed till recovery well on the Cianci property is that contaminants will be actively withdrawn from the primary off-site contaminant source area. This will expedite the clean-up process, thereby increasing the potential for remediation prior to activation of the Town of Southington Well No. 6. As previously discussed, contaminants already entrained in the till flow system will tend to remain in place unless they are physically removed. The proposed till recovery well will be the most direct method of collecting and treating this contaminated groundwater.

Currently, contaminants are slowly migrating through the till toward the outwash deposits. An additional advantage to the proposed till recovery well is that contaminants will be intercepted prior to their entry into the outwash flow system. The till recovery well will also reduce contaminant flow that now remains in the till flow system south of the surficial till/outwash interface. The approved off-site till recovery well (Nos. 1, 2, 3, 6 and 8) that are currently being installed are designed to recover this contaminated till/bedrock flow, however, the proposed till recovery well will augment the efficacy of the system.

Estimated Hydraulic Impact of the Till Recovery Well

The most important factor in determining the hydraulic impact of the till recovery well is the permeability of the till deposits. Glacial till is an unsorted, unstratified ice contact deposit and till permeability can naturally be expected to vary up to one or two orders of magnitude. In a depositional environment such as the Quinnipiac valley east of SRSNE, small lenticular bodies of glaciofluvial sand might also be expected which further complicates the areal estimation of permeability and hydraulic effectiveness of the till recovery well. Because of the inherent hydrogeologic variability, the extent of the well's radius of hydraulic influence and capture zone can only be reliably determined following its installation

and operation. The well will be equipped with a pump that is sized sufficiently to pump from 0.5 to 15 gpm. The till recovery well system will therefore be flexible enough to handle and anticipated range of permeability conditions.

To provide a preliminary estimate of the hydraulic impact of the till recovery well, three characteristic permeability scenarios have been evaluated. The permeability of the till deposits have been measured by several investigators. Presented below in a summary of the previously complied permeability estimates.

Investigator	Site	Method	Permeability
Warzyn	TW-7A	In-Situ Test	2.43×10^{-4} cm/sec.
Warzyn	TW-7B	In-Situ Test	8.6×10^{-6} cm/sec.
Warzyn	TW-8A	In-Situ Test	1.3×10^{-3} cm/sec.
Warzyn	TW-7A	In-Situ Test	2.11×10^{-4} cm/sec.
Warzyn	WE-8	Aquifer Test	6×10^{-4} cm/sec.
YWC	TW-7A	In-Situ Test	2.6×10^{-5} cm/sec.
YWC	TW-7A	In-Situ Test	2.3×10^{-5} cm/sec.

To estimate the pumping rate from the proposed till recovery well and determine it's hydraulic impact, three representative permeability values were evaluated:

Case 1 $K = 1 \times 10^{-3}$ cm/sec. (21.2 gpd/ft^2)
Case 2 $K = 5 \times 10^{-4}$ cm/sec. (10.6 gpd/ft^2)
Case 3 $K = 5 \times 10^{-5}$ cm/sec. (1.06 gpd/ft^2)

To determine the pumping rate and the associated drawdown from the till recovery well, the Theis equation can be used (Groundwater; 1979; Freeze and Cheery, page 326):

$$h_o - h = \frac{Q}{4 \pi T} W(u)$$

Where:

$h_o - h = s$	=	Drawdown (ft)
Q	=	Pump Rate (gpd)
T = Kb	=	Transmissivity (gpd/ft)
K	=	Permeability (gpd/ft^2)
b	=	Saturated Thickness (ft)

Where:

$$U = \frac{r^2 Sy}{4Tt}$$

Sy	=	Specific Yield
t	=	Time
r	=	Radius in Feet Where Drawdown Measured

To determine the pumping rate under each permeability case, the specific capacity was calculated. Assuming a maximum drawdown of 30 feet in the till recovery well, the pumping rate was then determined. Rearranging this equation for specific capacity:

$$\frac{Q}{S} = \frac{4\pi T}{W(u)}$$

$$U = \frac{r^2 Sy}{4 Tt}$$

r	=	Radius of Well = 0.25 ft.
Sy	=	0.03 (based on Wehran Pump Test)
t	=	90 days
T (Case 1)	=	784.5 gpd/ft.
T (Case 2)	=	392.2 gpd/ft.
T (Case 3)	=	39.2 gpd/ft.

Solving these equations for the three permeability cases, the following pumping rates were calculated.

Case 1	=	11.25 gpm
Case 2	=	6.34 gpm
Case 3	=	0.66 gpm

Using these pumping rates, the Theis equation was then used to estimate the drawdown after 90 days at distances of 10, 25, 50 and 100.

The location of the proposed till recovery well is approximately 150 feet from the Quinnipiac River and from the till/washout contact. Table 13 presents the estimated drawdowns for all three permeability scenarios.

Figure 10 shows the projected configuration of the water table with the till recovery well pumping. Figure 10 is based on the lowest estimated till permeability (Case No. 3) which yields the most conservative estimate of hydraulic impact. The major limiting factor to the expansion of the radius of influence of the till recovery well will be the river and the till/outwash contact which are both approximately 150 feet from the well. These features will provide a source of recharge to the till well and will inhibit drawdowns. It is this recharge from the till outwash contact, that in fact, will reverse the flow of contaminants. In effect, the clean water from the outwash will be drawn in a northerly direction to help flush contaminants from the till. This further reduces any benefit that could be projected for the outwash well and supports the contention that pumping the outwash well would be counterproductive. Therefore, the potential exists that pumping the outwash well could actually have a deleterious effect on site remediation. The cone of depression may extend somewhat farther than 150 feet to the north and west depending on site specific permeability.

The estimated hydraulic impacts are based on idealized analytical solutions. The equations utilized assume an isotropic aquifer of infinite extent and uniform thickness. These assumptions are not true for the till deposits being analyzed and will tend to modify the estimated drawdowns. Additionally, microscale variations in till permeability will also cause actual pumping results to deviate from these predictions.

The hydraulic impact of future pumping from Southington Well No. 6 at a maximum capacity of 1,400 gpm on the till recovery well is considered to be negligible. This assertion is based

in distance/drawdown data from Well No. 6, which showed approximately 0.75 feet of drawdown in monitoring Well No. OW-2-75 which is located approximately 700 feet south of the till recovery well. The maximum extent of the Well No. 6 drawdown was projected to be approximately 1,300 feet. Because of the significant permeability difference between the outwash and till deposits, maximum pumping from Well No. 6 will not influence water levels in the till.

Off-Site Recovery System Hydraulic and Water Quality Verification

In Section 8.0 of the YWC June 22, 1984 Off-Site Groundwater Interceptor System Engineering Report, hydraulic and water quality verification plans were proposed and subsequently approved by EPA and associated reviewers. SRSNE will implement these verification measures as previously described. This will include the installation of two new monitoring Well Nos. SRS-5 and SRS-6. They will be screened in outwash and till/bedrock respectively. Water level monitoring and groundwater sampling will proceed as approved. It should be noted that projected outwash drawdowns will not be achieved because the outwash recovery well will not be installed or pumped at this time. The outwash monitoring Well SRS-5 will be installed, however, so that outwash hydraulic monitoring can be implemented should outwash pumping be necessary in the future.

CONSTRUCTION/SCHEDULING CONSIDERATIONS

As SRSNE is specifically requesting that construction of the outwash well be suspended until such time as it may be needed, there are many scheduling considerations that need to be addressed. SRSNE is prepared to install both the outwash well and its associated stripping tower treatment system in the event that the well is deemed necessary based upon specific sampling. It is emphasized that it is our intent to install all components of the approved groundwater intercept system associated with the outwash well, although the actual outwash well construction would be suspended. Specifically, we intend to install all force mains, groundwater transfer pumps, and electrical components necessary to activate the outwash well, should it be required.

The stripping tower that would be required, in the event that the high volume outwash well is activated, would be comprised of an off-the-shelf stripping tower. The system has been designed and specified by SRSNE and is ready for purchase. In addition, we have contacted potential suppliers and have determined that the equipment can be readily supplied. Since it is skid mounted, it can be immediately installed. The two major components of the system are a large diameter pipe containing packing media and an evacuation fan for pulling air through the stripping tower. In the event that the outwash well is deemed necessary, then SRSNE can immediately install the outwash recovery well and the stripping tower associated with treating groundwater from this well in a timely fashion. Criteria to be utilized in determining whether or not the outwash well is needed as a result of activation of the Town of Southington Drinking Water Well No. 6, or for other reasons, will be related to EPA/SRSNE Consent Decree limits as described in further detail below.

The three (3) groundwater monitoring wells that have been sampled over the past few years for documentation of outwash water quality are Well Nos. X, SRS-4, and MW-8. These three (3) wells will be sampled quarterly during the first year of operation of the off-site groundwater interceptor system, and annually thereafter, as outlined in both the Consent Decree and the June 22, 1984 engineering report documenting the off-site interceptor system which was approved by EPA. SRSNE will sample these three (3) wells quarterly for the first year and annually thereafter, for all of the Consent Decree parameters outlined. To determine if there are any negative trends in outwash water quality, an assessment period of two (2) years will be utilized. Because of the importance of the individual pieces of data, re-sampling at times may be necessary.

Significant trends will be considered to be established if three (3) consecutive readings show increases in contaminant concentrations in the outwash. In the event that contaminant concentrations exceed those allowable by limits set in the Consent Decree, then SRSNE will immediately install the outwash well. This well can be installed in a period of time, not to exceed two (2) weeks as long as a well installation driller is available. During such time that the stripping tower

associated with the outwash recovery well is being purchased and installed, recovered groundwater will be pumped through the existing stripping tower to achieve partial treatment. In any case, there will be no discharge of untreated groundwater to the Quinnipiac River. After completion of installation of the additional stripping tower, groundwater recovered from the off-site groundwater interceptor system, including the outwash recovery well, will be pumped through the new stripping tower.

As mentioned previously in this letter report, it is the intent of SRSNE to continue forward with installation of the off-site groundwater interceptor system as designed by our consultants and approved by EPA. No delays will occur as a result of consideration of this alternative proposal involving the best aspects of the alternative proposal presented by SRSNE on March 26, 1986, and the original approved off-site groundwater interceptor system, as long as EPA representatives act on this request within a reasonable time period. It will be possible for SRSNE to provide the supplemental groundwater recovery system as outlined herein after completion of construction on the approved system. Certain construction details associated with the nature of the railroad crossing and construction activities in the immediate vicinity of the outwash well need to be finalized within the next 2 to 3 weeks. These details will impact upon the supplemental off-site groundwater recovery system in the event that the system is installed.

SUMMARY

This letter report combines the most technically desirable aspects of both the June 22, 1984 approved off-site groundwater interceptor system and the alternative proposal previously submitted to EPA by SRSNE on March 26, 1986. The proposal calls for a suspension of the outwash recovery well construction until it is deemed necessary based upon groundwater quality sampling. In exchange for the suspension, it proposes the installation of a till recovery well downgradient of TW-7B in the area of highest groundwater contamination. This supplemental recovery well also offers the major advantage of recovering highly contaminated groundwater, thereby expediting the groundwater remediation process. This could be particularly beneficial if and when the Town of Southington reactivates Well

No. 6. Installation of this supplemental system will result in interception of groundwater high in contaminant concentration prior to its entering the glacial outwash. This higher concentration groundwater will not only be more efficiently treated by a stripping tower than the lower concentration groundwater recovered from the clean outwash well, but will result in significantly shortening the remediation time period.

These are numerous additional advantages to installing the recovery well downgradient of TW-7B. The quantity of groundwater to be intercepted and pumped from the ground and subsequently discharged to the Quinnipiac River will be significantly reduced. The forecast time for clean up of the site will be significantly reduced as a result of a greater amount of contaminants being recovered from the ground. Installation of a groundwater recovery system downgradient of TW-7B will also serve to provide a back-up system to the on-site multi-point shallow well recovery system. This will be of value if the low permeability of the till on-site adversely effects the extent of its influence to the off-site area. The supplemental system would provide a permanent hard pipe discharge across the Cianci Property containing all plant effluents from SRSNE. This discharge pipe to the Quinnipiac River would not be subjected to termination by the Southington Water Board as is currently the case for the proposed interim hard pipe on Water Board Property. Installation of a permanent effluent discharge pipe to the Quinnipiac River has determined to be a very high priority with both the Town of Southington and the Connecticut Department of Environmental Protection. Finally, selection of the supplemental off-site system as outlined herein will provide EPA with the on-site system verification wells that could not be installed to date due to access limitations.

This proposal also offers EPA the opportunity to supplement the approved off-site groundwater interceptor system with no penalties in construction time. The construction time associated with the approved off-site groundwater interceptor system will be exactly as originally proposed and will not be delayed by consideration of this alternative proposal. Obviously the sooner EPA representatives can act on this

proposal, the sooner the supplemental groundwater recovery system in the vicinity of TW-7B can be installed. It is noted that every effort is being made by SRSNE to expedite our off-site contractor significantly beyond the originally proposed construction schedule. As you are aware, a difference of opinion exists between SRSNE and EPA as to when off-site groundwater recovery system construction should be completed. Every effort is being made to attempt to meet the construction schedule completion date as perceived by EPA of July 7, 1986, however, this deadline will be extremely difficult. Any hope in meeting this construction date could be significantly improved by the expeditious consideration of this proposal by EPA.

Specifically, SRSNE is requesting that EPA approve suspension of the outwash recovery well component of the approved off-site groundwater interceptor system and its associated stripping tower until such time as they be deemed necessary by detection of contamination in the outwash. In exchange for this suspension, SRSNE is prepared to install a supplemental groundwater recovery system comprised of a till recovery well downgradient of TW-7B, and a force main connecting this well into the approved off-site groundwater interceptor system. In addition, SRSNE is prepared to install a second effluent pipe for SRSNE property to the Quinnipiac River to provide a permanent discharge point for all effluents from the SRSNE facility as opposed to the interim pipe installed across the Water Board property for the off-site system alone. Negotiations are currently ongoing with our off-site system contractor to initiate construction of the supplemental groundwater recovery system on Cianci property immediately upon completion of the approved off-site groundwater interceptor system. Additional details associated with the system will be field engineered by our consultants working with the contractor.

This proposal commits SRSNE to all aspects of the approved off-site groundwater interceptor system and its associated hydraulic verification and monitoring as outlined in our original engineering report dated June 22, 1984. Therefore, it is not necessary for EPA to consider any changes in the original approved plan. The only item requiring consideration

and approval by EPA is whether or not the advantages to installing a supplemental off-site groundwater recovery system and second effluent pipe outweigh suspension of construction of an outwash recovery well that would be pumping clean water. Specific criteria have been established herein for immediate construction of that outwash well, should it be required.

SRSNE and their representatives thank you for consideration of this proposal. We believe the proposal incorporates the technical desires of personnel present at the meeting at EPA Headquarters on April 22, 1986. All parties present appeared to agree with the technical merits of a till recovery well in the higher contamination area of TW-7B. This proposal offers EPA an opportunity to have that recovery well installed immediately upon completion of the approved off-site system.

We stand ready to answer any questions that you may have on this proposal so that a timely approval can be received by SRSNE for finalization of construction details associated with the ongoing off-site system construction.

Very truly yours,

Mr. James R. Hulm
Vice President

JRH:raz
Attachments

cc: P. Marin
J. Stewart
S. Kellogg
R. Hall
C. Boll
G. Bligh

8/4/86 Copies Sent To: Hart
J. Stewart
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0015496

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION I

J. F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203

AUG 0 7 86

CERTIFIED MAIL RETURN RECEIPT REQUESTED

James Hulm, Vice President
Solvents Recovery Services of New England
1200 Sylvan Street
Linden, NJ 07036

Dear Mr. Hulm:

EPA is in receipt of your report dated May 12, 1986 regarding a supplemental till/bedrock well alternative for the off-site groundwater intercept system at the Solvents Recovery Services of New England (SRSNE) site in Southington, Connecticut. SRSNE's proposed alternative is to modify the off-site groundwater intercept system approved by EPA on November 2, 1984 by replacing outwash recovery well no. 7 with till/bedrock recovery well no. 9 located on Cianci property. After discussions with you, the Connecticut Department of Environmental Protection (DEP), the Town Water Board, the technical consultant for the Town of Southington, the Connecticut Fund for the Environment (CFE) and the representative of the abutting property owner Mr. Cianci, EPA sees technical advantages that may be achieved with the groundwater remediation concepts contained in your report. As a result, EPA approves the alternative described in the May 12, 1986 SRSNE submittal contingent upon the following conditions:

(1) Initial Flow Net Analysis - Within 14 days of receipt of this letter SRSNE must provide a flow net analysis or other appropriate analysis of the projected hydraulic impact from the pumping of all proposed groundwater recovery wells screened in till or bedrock or both. This analysis shall demonstrate that the migration of contaminants in groundwater is precluded, to the extent feasible, by the proposed groundwater intercept system between proposed till/bedrock recovery well no. 3 (westernmost till/bedrock recovery well) and proposed till/bedrock recovery well no. 9 (on Cianci property) as well as between till/bedrock recovery well no. 8 (easternmost till/bedrock recovery well) and proposed till/bedrock recovery well no. 9. These locations are shown in Figure 1. If either SRSNE or EPA determine that the above demonstration cannot be made with the groundwater intercept system configuration proposed in the May 12, 1986 SRSNE submittal, a different configuration shall be proposed by SRSNE. This different configuration shall be accompanied by a flow net analysis that demonstrates that the migration of contaminants in the groundwater is precluded between till/bedrock recovery well no. 3 and the location of proposed till/bedrock recovery well no. 9 as well as between till/bedrock recovery well no. 8 and the location of the proposed till/bedrock recovery well no. 9.

EXHIBIT 14

(2) Proposed Well No. 9 Construction Requirements - The proposed till/bedrock recovery well no. 9 must have a screened interval which includes not only the contaminated zone of till, but also a minimum of the top 10 feet of bedrock. This construction requirement must be used in the flow net analysis required in Condition 1 above.

(3) Field Verification of Flow Net Analysis - Field verification of the flow net drawdown projected in the analysis described in Condition 1 above shall be demonstrated by a 90-day aquifer test to verify the projected combined performance of all proposed till/bedrock recovery wells including proposed well no. 9 as described in 3b below. During the first 30 days of the aquifer test, the performance of proposed well no. 9 will be demonstrated as described in 3b below.

a) Locations of Hydraulic Verification Wells - In order to verify the projected combined hydraulic performance of the proposed till/bedrock wells, head measurements must be obtained prior to, during, and after the 90-day aquifer test from well nests capable of demonstrating the predicted drawdown. For the eastern till/bedrock recovery wells no. 3, 4, 5, and 6, two well nests are required: SRS-3/SRS-4 and MW-1/TW-11. For the western till/bedrock recovery well no. 8, the three-well nest MW-5/MW-7/MW-8 shall be monitored (see Figure 1 and Table 2). For the proposed till/bedrock well no. 9, two well nest are required: SRS-7a/SRS-7b and SRS-8a/SRS-8b (locations to be proposed by SRSNE and approved by EPA as decribed in Condition 3b below.

b) Well No. 9 Demonstration - Field verification of the flow net drawdown projected for proposed well no. 9 will be demonstrated as a part of the 90-day aquifer test required by Condition 3c below. At a minimum, projected drawdown must be achieved at two new locations (i.e. SRS-7 and SRS-8) within the cone of depression of proposed well no. 9. These new hydraulic verification well locations must be proposed by SRSNE and approved by EPA prior to well installation. The frequency of water level measurements during the well no. 9 demonstration shall also be proposed by SRSNE and approved by EPA. At each hydraulic verification well location, a well nest consisting of one overburden well and one bedrock well must be installed to demonstrate: (a) consistency between the actual drawdown in the overburden and the drawdown projected for well no. 9 in the analysis required in Condition 1 above, and (b) the capacity of proposed well no. 9 to induce or enhance vertically upward gradients. If within 30 days of commencement of pumping till/bedrock recovery wells (including well no. 9 and any additional till/bedrock wells on Cianci Property that have been determined to be necessary to fulfill Condition 1 above), the drawdown in the new hydraulic verification wells decribed in this condition above is not

within 80% of the drawdown projected for these locations by the analysis described in Condition 1, then SRSNE shall, within 14 days, propose additional till/bedrock recovery wells and/or withdrawal trenches and/or increased withdrawal rates. In this proposal SRSNE shall demonstrate that operation of these proposed groundwater withdrawal devices or increased withdrawal rates will attain a drawdown equivalent to that projected by the analysis decribed in Condition 1 or will otherwise preclude the migration of contaminants in groundwater to the extent feasible. After EPA approval of any additional wells or withdrawal trenches, SRSNE shall construct and operate them in accordance with a schedule approved by EPA, but in no case shall the construction period be longer than 90 days. After completion of any approved modifications to the groundwater recovery system, field verification of the combined system's performance shall be required as in Condition 3c below.

c) 90-Day Aquifer Test - Notwithstanding the requirements of conditions 3a and 3b above, the projected hydraulic performance of the entire off-site groundwater recovery system will be field verified once groundwater extraction begins at the recovery wells. Daily head measurements are required during the first week of pumping, head measurements are required every other day during the second week, and weekly head measurements shall be obtained during the remainder of the 90-day aquifer test period to provide a sufficient database on which to evaluate system performance. At the end of this 90-day period, head measurements from all available wells must be obtained to provide the necessary data for the construction of a flow net. These measurements and flow net shall be included in the report decribed in Paragraph 12(G) of the Consent Decree.

(4) Location and Monitoring of Groundwater Quality Verification Wells - Groundwater quality verification well locations will include SRS-3, SRS-5, SRS-6, Well X, and CW-8-77 (see Figure 1 and Table 1) as well as the termination wells described in Paragraph 13(A) of the Concent Decree. Frequency of monitoring will occur as outlined in Section 8.c of SRSNE's June 22, 1984 Addendum No. 1 for the constituents listed in Paragraph 6 of the Consent Decree. However, annual sampling will continue over the period of Consent Decree performance as opposed to termination after 3 years as proposed in Section 8.2 of SRSNE's Addendum No. 1. Groundwater quality verification wells SRS-6 (screened only in bedrock) and SRS-5 (screened only in overburden) must be recognized as the "one additional, fully screened and fully penetrating well to be installed north of the groundwater intercept system, and within its influence, at the mid-point of a line parallel to a line running between existing wells MW-1 and MW-7," pursuant to Paragraph 13(A) in the Consent Decree. The location of wells SRS-5 and SRS-6 shall be as originally mapped and as roughly indicated on the attached Figure 1 (approxi-

mately 60 feet west/northwest of well X). This location is opposed to the location proposed in the YWC/LEA Site Plan and Well Details dated February 1984, Revision #8, dated 5/8/86 (approximately 60 feet northeast of well X and 30 feet northwest of proposed outwash recovery well no. 7).

(5) Discharge Pipe Installation - SRSNE shall install a hard discharge pipe across the Cianci property within 90 days of this approval. Within 60 days of this approval SRSNE shall install, on the Cianci property, the 3 verification wells in locations previously approved by EPA, in its letter of December 20, 1984, for the on-site groundwater recovery well system.

(6) Outwash Well No. 7 - SRSNE will install the 50 gpm, outwash well no. 7 (or an alternative acceptable to EPA) if either or both of the following conditions are met: a) upon completion of the initial 90-day period, a flow net analysis based on actual head measurements from appropriate wells demonstrates that the supplemental till/bedrock recovery well system is not preventing southerly migration of contaminants beyond the line specified in Paragraph 13(A) of the Consent Order, or b) any or all of monitoring wells SRS-3, SRS-5, SRS-6, Well X, or CW-8-77 fail to show stable or decreasing trends in contamination, or do not remain below the Consent Decree shut-off criteria for the period of system performance. If prior to termination of the Consent Decree, the Town of Southington production wells no. 4 and/or 6 are put back into service, the frequency of monitoring for groundwater quality verification shall be as outlined in Section 8c of SRSNE's June 22, 1984 Addendum No. 1 and the frequency of monitoring hydraulic performance shall be as outlined on Condition 3c above.

(7) Cianci Property and Town Property Access - Within 30 days of the receipt of this letter, SRSNE shall provide EPA with written documentation of an agreement with Mr. Cianci for access and permission to construct, operate, and maintain those facilities referred to in the May 12, 1986 SRSNE report and in this letter which must be located on Cianci Property. This access must extend to EPA, as well as SRSNE, for purposes of carrying out the functions specified in paragraph 19(B) of the Consent Decree. The period of access and permission referred to in this documentation shall be until the time of termination of operation and maintenance of the groundwater intercept system as described in Paragraph 13 of The Consent Decree. This written documentation of agreement shall be signed by authorized representatives of both parties. If, for reasons of lack of necessary access to Cianci property or Town of Southington property any of the wells, discharge pipes, other pipes, or other hydraulic structures described in the May 12, 1986 SRSNE submittal or described in any of the above conditions, are not constructed within 60 days of this approval, this conditional approval shall be voided and the off-site groundwater intercept system shall be

constructed and operated in accordance with the design approved by EPA on November 21, 1984.

(8) Connecticut Fund for the Environment Comments - Connecticut Fund for the Environment (CFE) shall have the right to comment upon the SRSNE report of May 12, 1986 and this letter pursuant to Paragraph 14(B) of the Consent Decree. As EPA sees fit, EPA shall incorporate into this conditional approval any comments provided by the Connecticut Fund for the Environment within 30 days of its receipt of this letter.

(9) Modification of the Consent Decree - The Consent Decree shall be modified to incorporate the applicable provisions of the report of May 12, 1986 and of this letter. If any of the four parties to the Consent Decree do not agree in writing to these modifications within 45 days of receipt of this letter, then this conditional approval shall be voided and the off-site groundwater intercept system shall be constructed and operated in accordance with the design approved by EPA on November 2, 1984. This letter shall serve as EPA's written agreement to incorporate the applicable provisions of the report of May 12, 1986 and this letter into the Decree as required by this condition.

If SRSNE is unwilling to accept the conditions for approval set forth in this letter, EPA requests written notice of such unwillingness within 14 days of receipt of this letter. Unwillingness to accept any of the above conditions shall mean that the off-site groundwater intercept system shall be constructed and operated in accordance with the design approved by EPA on November 2, 1984 and in accordance with the schedule described in EPA's letter of April 28, 1986. If EPA does not receive written notice of unwillingness to accept this approval and conditions within 14 days, EPA will assume the approval and conditions are acceptable to SRSNE.

Regarding the construction schedule for the off-site groundwater intercept system, EPA's position is contained in my letter to you of April 28, 1986. As indicated in that letter, the deadline for completion of construction of the off-site groundwater intercept system was July 7, 1986, 180 days after the final local approval for access to Town property. Further, EPA indicated in its letter of April 28, 1986 and in later converstations with you that EPA has not approved any delays associated with SRSNE's preparation of an alternative system or with EPA's review of such an alternative. EPA recognizes, however, that the alternative system proposed by SRSNE and the conditions for EPA approval described in this letter contain engineering features not included in the system design approved by EPA in 1984. Based on the additional field activities required, EPA extends the deadline for completion of construction of the alternative off-site groundwater intercept system described in your submittal

of May 12, 1986 and the conditions in this letter by 60 days to September 5, 1986. The deadline for starting operation of the off-site groundwater intercept system is 14 days after the completion of construction. The above overall construction and operation deadlines in no way superceed the schedules described within individual conditions described earlier in this letter. Further, if SRSNE does not accept the conditions for approval set forth in this letter as requested above, the deadline for completion of construction of the previously approved system will remain July 7, 1986 and any periods of noncompliance will be measured from that date in accordance with the provisions of Paragraph 16 of the Consent Decree. EPA makes this deadline extension based on the opinion that the potential benefits gained by the alternative system, incorporating the conditions of this letter, are likely to offset the adverse environmental effects of the 60-day delay.

If you have any questions regarding this letter, please contact me or Joel Balmat of the EPA Region I staff at (617) ~~223-1942~~ 565-3651.

Your response is requested.

Sincerely yours,

Heather M. Ford, for

Heather M. Ford, Chief
Connecticut Superfund Section

cc: Gilbert Bligh
Suzanne Langille
John Ayers
John Weichsel
David Kelly
Nicolas Cianci
Robert Clemens
John Sujat
Wesley Winterbottom
Chairman, Southington Water Board

TABLE 1. Groundwater Quality Verification Wells (not including all termination wells)

Well	Screened Interval	Strata
CW-8-77	NA	outwash
SRS-3	32.5-42.5'	till
SRS-5	*	overburden
SRS-6	*	bedrock
Well X	NA	outwash

* proposed, not yet installed

NA - information not readily available

- - - - - - - - - - - - - - - - - -

TABLE 2. Hydraulic Verification Wells

Well	Screened Interval	Strata
SRS-4	5.0-15.0'	outwash
SRS-3	32.5-42.5'	till/bedrock
MW-1	23.5-42.5'	till/bedrock
TW-11	5.5-15.5'	till
MW-5	66.5-76.5'	till/bedrock
MW-7	24.5-44.5'	outwash
MW-8	5.0-25.0'	outwash
SRS-7a	*	overburden
SRS-7b	*	bedrock
SRS-8a	*	overburden
SRS-8b	*	bedrock

* proposed, not yet installed

0015503

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION I

J. F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203

SEP 2 2 86

OHB JS S/C done 9/24/86

James Hulm, Vice President
Solvents Recovery Service of New England, Inc.
1200 Sylvan Street
Linden, NJ 07036

RE: Off-site Groundwater Recovery System

Dear Mr. Hulm:

I am writing to confirm our September 15, 1986, phone conversation in which you stated that Solvents Recovery Services of New England (SRSNE) has decided to no longer pursue approval of its May 12, 1986, proposed off-site alternative (i.e., proposed till/bedrock recovery well no. #9) which was conditionally approved by EPA on August 7, 1986. Accordingly, SRSNE must install and operate the off-site groundwater recovery system as originally approved by EPA on November 2, 1984.

As mentioned in our August 7, 1986 letter, the deadline for completing construction of the originally approved off-site system was July 7, 1986, and any periods of noncompliance will be measured from that date in accordance with Paragraph 16 of the Consent Decree.

If you have any questions, please contact Joel Balmat at (617)565-3651.

Sincerely,

Martha Wadle /for

Heather M. Ford, Chief
CT Superfund Section

cc: Gilbert Bligh
Suzanne Langille
John Ayers
David Kelly
Wesley Winterbottom
Julio Olimpio
Robert Clemens
John Sujat

EXHIBIT 15

0015504

SOLVENTS RECOVERY SERVICE
OF NEW ENGLAND, INC.

P. O. BOX 362
SOUTHINGTON, CONN. 06489

PHONE: (203) 628-8084

November 25, 1986

Mr. Joel Balmat
Remedial Project Manager
United States Environmental
Protection Agency
Region I
JFK Federal Building
Boston, MA 02203

Re: Request For Information On Groundwater
Recovery Systems - Letter Dated 10/31/86
J. Balmat - J. R. Hulm

Dear Mr. Balmat:

Attached is a copy of a letter from our consultant accompanying the information you requested in your 10/31/86 letter. We'll be happy to review this with you at your convenience.

Very truly yours,

James R. Hulm
Vice President

JRH:dap
Attachment

cc: C. H. Boll
S. Kellogg
J. Stewart, Esq.

EXHIBIT 16

0015505

ENGINEERING DIVISION

November 20, 1986

Mr. James R. Hulm
Vice President
Solvents Recovery Service
of New England
1200 Sylvan Street
Linden, NJ 07036

Dear Jim:

Enclosed please find information that is being transmitted to satisfy requests made by Joel Balmat concerning the Solvents Recovery Service of New England groundwater recovery systems. All of the requested information is provided in tables, maps, or the report prepared by Hydro Group.

The requested information is being supplied as follows:

	Information	Location of Information
1.	As-Built Locations of On-Site Wells	Drawing PZ-1
2.	As-Built Locations of Off-Site Wells	Figure 1 (11/18/86)
3.	Well Logs for the On-Site System	No Well Logs Because Casing Was Driven
4.	Well Logs for the Off-Site System	Hydro Group Report
5.	Well Construction Details for the On-Site System	Figure 2, Table 2
6.	Well Construction Details for the Off-Site System	Hydro Group Report and Table 3
7.	Drawdown Data for On-Site Recovery Wells	Table 1
8.	Pump Tests for Off-Site System	Hydro Group Report

It is noted that the reference point or baseline for the on-site system (recovery wells and monitoring wells WE-5, TW-8A) has been defined as the arithmetic average of readings taken on January 9, 10, and 13, 1986.

If you have any questions, please do not hesitate to contact me.

Very truly yours,

Keith E. Warner, P.E.
Project Manager

KEW:cgk
Enclosures

cc: J. Stewart
S. Kellogg, P.E.

November 20, 1986

Mr. James R. Hulm
Vice President
Solvents Recovery Service
of New England
1200 Sylvan Street
Linden, NJ 07036

Dear Jim:

The attached table is a summary of drawdown data for the on-site groundwater recovery system at Solvents Recovery Service of New England. The readings indicate the number of feet that the groundwater table has been lowered in recovery wells compared to a baseline of January 1986. The baseline has been defined as the average of groundwater level readings taken on January 9, 10, and 13, 1986 (for on-site recovery wells 1 through 25, and monitoring wells TW-8A and WE-5).

Drawdown data for the monitoring wells (TW-8A and WE-5) was submitted under separate cover and has not been included. If you have any questions, please do not hesitate to contact me.

Very truly yours,

Keith E. Warner

Keith E. Warner, P.E.
Project Manager

KEW:cgk
Attachment

cc: M. Quinn
D. Bliss

TABLE 1
RECOVERY WELL DRAWDOWN MONITORING
ON-SITE GROUNDWATER RECOVERY SYSTEM
SOLVENTS RECOVERY SERVICE OF NEW ENGLAND

(All Readings are Recorded in Feet)

Well No.	1/14/86	1/15/86	1/16/86	1/17/86	1/21/86	1/23/86
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	(0.2)	(0.2)	(0.2)	0.8	(0.2)	(0.2)
5	0.2	0.2	0.2	1.2	0.2	0.2
6	0.7	0.7	0.7	6.7	0.2	0.2
7	0.2	0.2	0.2	6.2	0.2	0.7
8	0	0	1.0	8.5	0.5	0.5
9	0.5	0.5	1.0	9.0	1.5	2.0
10	0	0	0.5	5.5	0.5	0
11	0	0.5	0.5	1.0	0	0
12	0.2	0.7	0.2	0.7	0.7	0.7
13	0	0.5	0	0	0	0
14	0	0.5	0.5	0	1.0	0.5
15	0	0	1.0	1.0	0	0
16	(0.3)	0.7	0.2	0.7	1.2	1.2
17	0.7	(0.3)	0.2	0.3	0.2	0.7
18	0.2	0.7	0.7	0.7	0.7	0.7
19	0.5	5.5	2.0	5.5	1.0	1.5
20	0.3	0.8	3.3	0.8	1.3	1.8
21	4.3	2.8	4.3	4.8	6.3	5.8
22	7.8	6.3	6.8	8.8	10.8	11.3
23	4.0	3.0	4.5	1.5	5.0	5.5
24	1.1	6.6	6.6	6.6	0.6	2.1
25	*	*	*	*	*	*

NOTES:

1. All drawdown readings are compared to the average of readings taken on January 9, 10, and 13, 1986.

2. ( ) Number in brackets indicates a water level higher than the baseline level (average of January 9, 10, 13).

3. *Indicates a broken guage.

TABLE 1 (Continued)
RECOVERY WELL DRAWDOWN MONITORING
ON-SITE GROUNDWATER RECOVERY SYSTEM
SOLVENTS RECOVERY SERVICE OF NEW ENGLAND

(All Readings are Recorded in Feet)

Well No.	1/24/86	1/27/86	2/03/86	2/10/86	2/17/86	2/24/86
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	(2.5)	(3.0)	0	(3.0)
4	0.3	(0.2)	(2.2)	(2.2)	(0.2)	(2.2)
5	0.7	0.2	(1.3)	(1.3)	0.2	(1.3)
6	1.7	5.7	2.7	3.7	3.2	(0.3)
7	2.2	3.7	3.2	3.7	5.7	0.2
8	4.5	1.5	2.0	3.0	5.5	(1.5)
9	5.5	2.0	2.0	5.0	7.5	0
10	0.5	(0.5)	(1.0)	9.5	3.0	(0.5)
11	0.5	(4.5)	0	7.5	11.0	(3.5)
12	1.2	(0.3)	1.2	7.7	12.7	1.7
13	1.5	(1.0)	0	6.0	11.0	(3.5)
14	1.0	(1.0)	(0.5)	6.5	10.0	(2.5)
15	1.0	(0.5)	1.0	5.0	8.0	(0.5)
16	0.2	1.2	0.2	(0.3)	5.2	1.7
17	0.2	0.2	0.2	(0.3)	3.2	(4.8)
18	0.7	(0.3)	2.2	4.7	5.2	(5.8)
19	1.5	(0.5)	1.0	0.5	3.5	(9.5)
20	2.3	(0.2)	0.3	1.3	3.8	5.4
21	6.3	6.3	1.8	2.3	3.3	2.3
22	10.8	8.8	4.8	5.3	6.3	6.3
23	5.5	4.0	1.5	2.5	4.5	3.0
24	1.6	0.6	2.1	(0.4)	3.1	(2.4)
25	*	*	*	*	*	*

NOTES:

1. All drawdown readings are compared to the average of readings taken on January 9, 10, and 13, 1986.

2. ( ) Number in brackets indicates a water level higher than the baseline level (average of January 9, 10, 13).

3. *Indicates a broken guage.

TABLE 1 (Continued)
RECOVERY WELL DRAWDOWN MONITORING
ON-SITE GROUNDWATER RECOVERY SYSTEM
SOLVENTS RECOVERY SERVICE OF NEW ENGLAND

(All Readings are Recorded in Feet)

Well No.	3/03/86	3/10/86	3/17/86	3/24/86	3/31/86	4/07/86
1	0	0	0	0	0	0
2	0	0	(4.0)	0	0	0
3	(1.0)	(1.5)	(3.0)	(3.5)	(3.0)	(2.0)
4	(1.2)	(1.7)	5.8	6.3	10.8	5.8
5	(0.8)	0.2	6.2	3.7	12.2	3.7
6	4.2	4.7	5.7	5.2	6.7	6.7
7	6.2	5.7	6.2	6.7	6.7	8.2
8	5.0	5.5	5.0	5.5	6.5	7.0
9	6.5	3.0	6.5	7.5	7.5	7.0
10	2.0	9.0	2.0	2.5	3.5	5.0
11	9.0	7.0	(3.0)	8.5	9.0	13.0
12	9.7	6.7	9.3	8.7	9.7	13.2
13	11.0	8.0	9.0	11.0	9.5	13.0
14	10	7.0	10.0	10.0	10.0	12.0
15	10	6	10.0	7.0	12.0	11.0
16	6.2	5.2	5.2	5.7	6.7	7.7
17	5.2	4.2	3.7	4.2	3.7	3.2
18	5.7	4.7	5.2	7.7	7.2	8.2
19	5.5	3.5	5.5	5.5	5.5	5.5
20	2.8	4.3	3.8	4.8	4.3	4.8
21	6.3	3.3	5.3	5.3	3.8	5.3
22	8.8	8.8	6.8	7.8	5.8	7.8
23	4.5	5.5	4.5	3.5	4.5	5.5
24	6.6	6.6	6.6	6.6	6.6	6.6
25	*	*	*	*	*	*

NOTES:

1. All drawdown readings are compared to the average of readings taken on January 9, 10, and 13, 1986.

2. ( ) Number in brackets indicates a water level higher than the baseline level (average of January 9, 10, 13).

3. *Indicates a broken guage.

TABLE 1 (Continued)
RECOVERY WELL DRAWDOWN MONITORING
ON-SITE GROUNDWATER RECOVERY SYSTEM
SOLVENTS RECOVERY SERVICE OF NEW ENGLAND

(All Readings are Recorded in Feet)

Well No.	4/14/86	5/12/86	6/09/86	7/14/86	8/20/86	9/03/86
1	0	0	0	0	*	*
2	0	0	(2.0)	0	0	0
3	(2.0)	0.5	3.0	6.0	8.0	6.0
4	10.8	0.8	10.8	8.8	8.8	10.8
5	12.2	2.7	10.2	12.2	10.2	10.2
6	6.7	13.7	13.7	11.7	9.7	9.7
7	7.2	14.2	14.2	12.2	12.2	12.2
8	8.0	14.0	14.0	13.0	12.0	12.0
9	8.0	15.0	8.0	13.0	13.0	11.0
10	5.0	15.0	11.5	8.0	7.0	11.0
11	13.0	10.0	5.0	7.0	11.0	9.0
12	15.7	14.7	11.2	7.7	11.7	7.7
13	13.0	13.0	13.0	11.0	11.0	3.0
14	12.0	12.0	12.0	10.0	10.0	8.0
15	12.0	12.0	12.0	4.0	8.0	6.0
16	7.7	3.7	5.2	10.2	10.2	10.2
17	5.7	2.2	4.2	11.2	9.2	1.2
18	8.7	5.2	3.2	13.7	9.7	13.7
19	5.5	5.5	1.0	4.5	5.5	3.5
20	4.8	6.3	1.3	9.8	5.8	7.8
21	3.8	3.8	4.3	7.3	9.3	5.3
22	6.8	5.8	5.3	8.8	7.8	15.8
23	4.5	4.0	5.5	9.5	7.5	7.5
24	6.6	2.1	2.1	4.4	4.6	6.6
25	*	*	*	*	*	*

NOTES:

1. All drawdown readings are compared to the average of readings taken on January 9, 10, and 13, 1986.

2. ( ) Number in brackets indicates a water level higher than the baseline level (average of January 9, 10, 13).

3. *Indicates a broken guage.

TABLE 1 (Continued)
RECOVERY WELL DRAWDOWN MONITORING
ON-SITE GROUNDWATER RECOVERY SYSTEM
SOLVENTS RECOVERY SERVICE OF NEW ENGLAND

(All Readings are Recorded in Feet)

Well No.	9/17/86	10/01/86	10/29/86
1	*	*	*
2	0	0	0
3	8.0	6.0	6.0
4	8.2	8.8	10.8
5	10.2	10.2	12.2
6	9.7	9.7	7.7
7	10.2	12.2	10.2
8	12.0	10.0	10.0
9	9.0	11.0	9.0
10	5.0	7.0	5.0
11	7.0	9.0	11.0
12	9.7	7.7	15.7
13	5.0	5.0	13.0
14	6.0	6.0	12.0
15	4.0	4.0	8.0
16	0.2	4.2	4.2
17	1.2	3.2	5.2
18	3.7	5.7	5.7
19	5.5	3.2	5.5
20	7.8	7.8	1.8
21	3.3	7.3	7.3
22	3.8	5.8	9.8
23	3.5	9.5	7.5
24	2.6	4.6	4.2
25	*	*	*

NOTES:

1. All drawdown readings are compared to the average of readings taken on January 9, 10, and 13, 1986.

2. ( ) Number in brackets indicates a water level higher than the baseline level (average of January 9, 10, 13).

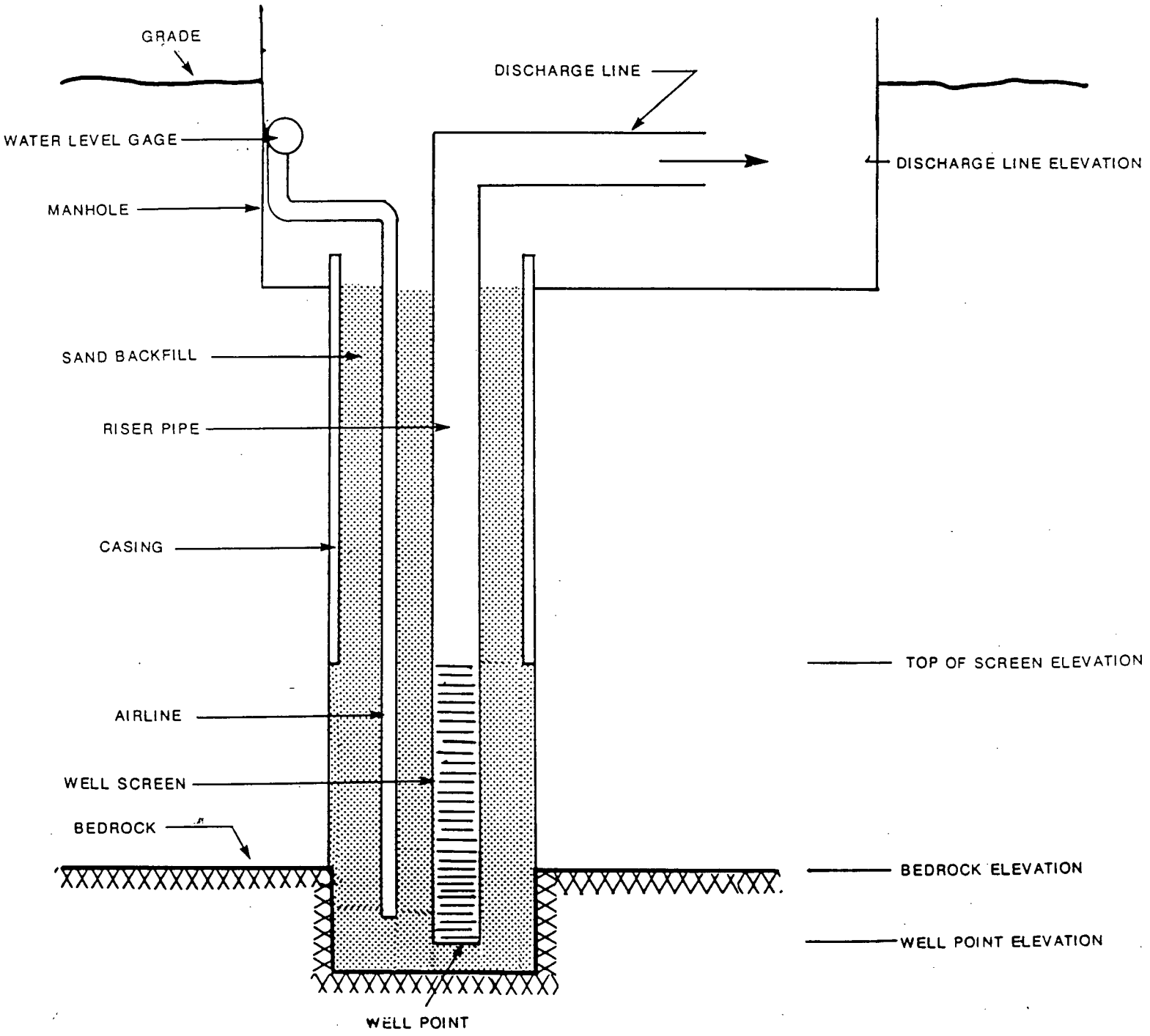
3. *Indicates a broken guage.

FIGURE 2

0015513

Typical Well Construction Details
Multi-point Shallow Well Groundwater Recovery System
Solvents Recovery Service Of New England

(See Table 2 for elevations)



(NOT DRAWN TO SCALE)

TABLE 2
WELL CONSTRUCTION ELEVATIONS
ON-SITE GROUNDWATER RECOVERY SYSTEM
SOLVENTS RECOVERY SERVICE OF NEW ENGLAND

(All Elevations Listed in Feet)

Well Number	Elevation of Well Point	Elevation of Bedrock	Elevation of Top of Well Screen	Elevation of Discharge Line
1	165.60	168.85	175.60	177.93
2	162.08	165.83	172.08	174.22
3	146.60	149.85	156.60	169.81
4	143.88	147.49	153.88	164.96
5	144.21	146.21	154.21	162.54
6	142.63	145.46	157.63	162.05
7	144.21	147.04	154.21	161.88
8	145.42	148.17	154.42	161.59
9	143.21	146.13	153.21	161.88
10	143.00	145.83	153.00	162.92
11	142.88	145.63	155.88	161.63
12	140.99	143.57	153.99	161.99
13	143.05	145.97	153.05	162.47
14	144.47	147.80	154.47	162.47
15	143.41	146.41	153.41	161.58
16	141.17	144.42	151.17	161.67
17	141.65	144.57	151.65	161.48
18	141.17	144.17	151.17	161.84
19	149.45	151.70	159.45	161.95
20	145.75	148.50	155.75	161.83
21	143.53	146.53	153.53	161.03
22	146.43	149.68	156.43	160.60
23	145.56	149.89	155.56	159.89
24	146.75	149.67	156.75	160.08
25	146.37	151.20	156.37	159.20

0015515

TABLE 3
WELL CONSTRUCTION ELEVATIONS (AS-BUILT)
OFF-SITE GROUNDWATER RECOVERY SYSTEM
SOLVENTS RECOVERY SERVICE OF NEW ENGLAND

(All Elevations Listed in Feet)

	Recovery Well #3	Recovery Well #4	Recovery Well #5	Recovery Well #6	Recovery Well #7	Recovery Well #8	SRS-5	SRS-6
Top of Well Casing	160.14	160.20	160.18	155.89	152.27	152.98	154.30	153.91
Top of Well Riser	NA	NA	NA	NA	NA	NA	154.23	153.80
Grade	159.37	159.46	159.07	155.27	151.15	152.13	152.20	151.49
Top of Well Screen	148.99	148.40	134.53	130.24	144.12	138.76	144.89	121.41
Bottom of Well Screen	108.01	107.28	103.63	94.06	118.48	68.69	114.89	81.66

NOTES:

1) Casing elevations were measured by YWC, Inc. on November 11, 1986. (All measurements with well head/cap off).

2) Grade is defined as the elevation of the ground immediately adjacent to the well. It should be noted that soil was mounded adjacent to recovery wells 3, 4, 5, and 6.

3) NA means not applicable.

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

July 15, 1987

Solvents Recovery Service of New Jersey, Inc.
1200 Sylvan Street
Linden, New Jersey, 07036

Attention: James R. Hulm

Re: DEP/WPC 1131-032
Town of Southington
Quinnipiac River Watershed

Dear Mr. Hulm:

Pursuant to our phone conversation earlier today, I have enclosed a copy of EPA's comments on the draft permit for SRSNE. To be able to address these comments the department will require further information on how the draft effluent limitations were derived. Actual calculations will need to be submitted. In addition, SRSNE must submit an explanation of how the recovery system will be operated at river flows below 10 CFS and still be capable of meeting the requirements of the site remediation consent order.

The present NPDES permit requires SRSNE to perform an in-stream monitoring program. This program was to be initiated within one month of approval of the scope of study. Results of this testing were due six month following the approval. The Director approved the scope of study December 10, 1986.

Since some of the testing is contingent on low river flows it is understandable that the testing could not be performed during high springtime flows. It is our understanding that testing has not yet begun. Since the duration of summer time low flow is limited it is critical that this tesing begin immediately as a year delay will be unacceptable.

If you should have any question please call me at 566-5903.

Sincerely,

Robert E. Kaliszewski

Robert E. Kaliszewski
Senior Sanitary Engineer
Water Compliance Unit

REK/ar

Enclosure

cc: Keith Warner, York Wastewater Consultants

0015516

Phone:
165 Capitol Avenue • Hartford, Connecticut 06106

EXHIBIT 17

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION I

J. F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203

0015517

Mike Harder, Assistant Director
Water Compliance Unit
Connecticut Department Of Environmental Protection
122 Washington Street
Hartford, CT 06106

Re: Draft NPDES Permit No. CT0023337
Solvents Recovery Services of New England

Dear Mr. Moore:

On June 9, 1987, Lynne Fratus of EPA's Water Division attended a meeting with Wesley Winterbottom and Robert Kalzewski of your Department. The meeting was organized by Joel Balmat EPA's superfund site manager for the Solvents Recovery Services site. The purpose of the meeting was to discuss the above referenced draft permit and other activities such as the RCRA permit involved with the site.

As discussed during the meeting, EPA has several comments on the draft permit developed by your office. Attached is a memo outlining these comments. contact me or Lynne at (617)565-3512 if you have any further questions.

Sincerely,

Gerald Potamis
Chief, Industrial Permits Section

cc: Wesley Winterbottom, CT DEP ✓
Joel Balmat, EPA Superfund Branch
Robert B. P. Stevens, GZA

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

0015518

DATE: June 16, 1987

SUBJECT: Comments on Draft Permit for Solvents Recovery Services

FROM: Lynne Fratus, Industrial Permits Section Lynne

TO: Gerald Potamis, Chief, Industrial Permits Section

This memo outlines the comments on the draft permit and the development of the effluent limitations for Solvents Recovery Services.

Derivation of Effluent Limitations

The fact sheet attached to the draft permit developed by the DEP states that the limitations were established using instream, chronic aquatic criteria, human health criteria or suggested no adverse response levels (SNARLs). In cases where no criteria exists, the limit was based on best available technology, drinking water standards or analytical laboratory detection limits. This methodology is slightly different than that employed by EPA.

The Clean Water Act requires that, at a minimum, the effluent limitations must reflect those achievable through the application of the best available technology (BAT). In addition, the limitations must also satisfy water quality requirements. Since the Quinnipiac River is designated for the uses of protection and propagation of fish and for primary and secondary contact recreation, EPA uses not only the chronic but also the acute water quality criteria to protect this designated use. This approach provides complete protection of the aquatic organisms.

The Quinnipiac River also impacts public water supply wells for the Town of Southington. Downstream from the proposed discharge, the Quinnipiac River recharges, to a certain extent a number of public water supply wells. The cones of depression for Southington's public water supply wells #4 and #6 extend out to the Quinnipiac River. Wells #4 and #6, approximately 1/2 mile downstream from the discharge point, are currently not in operation due to contamination.

Southington well #1 is located approximately 1 1/2 miles downstream, off of High Street, 1000 feet from the Quinnipiac River. It is a 500 GPM well in operation 24 hours per day during the summer months. Well #1's cone of depression also extends out to the Quinnipiac.

In light of the Safe Drinking Water Amendments (SDWA) of 1986, which includes the establishment of wellhead protection areas (SDWA §1428), discharge limitations must be established to

protect any existing water supply sources whose wellhead protection areas extend out to the Quinnipiac River.

To establish these limits, EPA would first consider any existing or proposed drinking water standards. In the absence of drinking water standards, EPA considers the human health criteria with a risk factor of at least 1 in 10^5, drinking water life time health advisories which do not take into account carcinogenic effects and interim guidance calculations based on reference dose levels for chronic exposure. Drinking water standards tend to be less stringent than the human health criteria because they are developed taking costs and other factors into consideration. For pollutants which have neither drinking water standards, human health criteria, lifetime health advisories or interim guidance calculations, EPA would establish limits which at a minimum reflect BAT.

The method used in the draft permit for calculating or converting these instream criteria to actual effluent (end of pipe) limits also differs from that employed by EPA. EPA converts the instream criteria, which are concentration based, to a concentration based effluent limit using a dilution factor. When converting the acute instream criteria, EPA calculates the dilution factor for critical flow conditions using the stream's 7Q10 low flow and the plant's maximum discharge flow. When converting the chronic criteria, the drinking water standards or human health criteria, EPA calculates the dilution factor for more average flow conditions using the stream's 30Q2 low flow and the plants monthly average discharge flow.

The draft permit uses a 7Q10 low flow of 2.2 cfs, an annual average flow of 31.32 cfs and an "intermediate" flow of 10.0 cfs at Southington for effluent limit calculations. EPA questions the derivation and the use of these flows. According to USGS flow data for the Quinnipiac River at a gage in Wallingford, the 7Q10 flow is 32.6 cfs and the 30Q2 flow is 61.4 cfs. Interpolating the flow in Southington from the flow in Wallingford using drainage area calculations gives a 7Q10 and 30Q2 at Southington of 4.9 cfs and 9.29 cfs, respectively. EPA understands that the 7Q10 flow of 2.2 used in the draft is a result of a Wasteload Allocation done by your office for municipal discharges. This lower 7Q10 flow is anticipated due to numerous groundwater diversion requests. EPA agrees to using this value for calculating limits at critical low flow conditions. However, for calculating limits at more average flow conditions, an annual average or "intermediate" flow is not consistent with EPA guidance documents. As stated above, EPA would use the 30Q2 flow for these calculations. Since long term USGS flow data at Southington is not available, EPA suggests using interpolation to develop the 30Q2 flow. The ratio between the 30Q2 and 7Q10 at Wallingford is 2 to 1. Using this same ratio at Southington yields a 30Q2 of 4.4 cfs. This value also takes into consideration the diversion requests. In conclusion, without further information, EPA

would use a 7Q10 flow of 2.2 cfs and a 30Q2 flow of 4.4 cfs for effluent limitation development.

Attachment B tabulates the criteria and the calculated limits based on the criteria for all the pollutants limited in the permit. Although EPA questions the derivation of the intermediate flow of 10.0 cfs, for consistency and comparison to the draft permit limts this value was used for calculations involving the more average low flow (i.e. for all calculations except in converting the acute aquatic criteria). EPA choses the most stringent limit required between the aquatic water quality criteria, drinking water requirements and those achievable through the application of the best available technology (BAT)(see also the comment on BAT). The concentration based limits which would be established by EPA were converted to mass based limits for comparison to those in the proposed draft. As seen in the table, several of the limits in the draft permit exceed those established using EPA's methodology.

The discrepancies between the limits proposed in the draft permit and those calculated using EPA's methodology are questionable. Assumptions were made in the development of the draft permit limits which would appear to give more restrictive limits than those calculated using EPA's methodology. Due to a lack of data, EPA assumed that the background concentration was zero for all pollutants. The limits in the draft permit were calculated with a conservative assumption that the background concentration for each pollutant was 1 ppb. In addition, the limits in the draft permit were calculated using human health criteria and SNARL numbers or drinking water standards when these were not available. As stated above, EPA gave priority to the drinking water standards and used human health criteria when there wasn't a drinking water standard. Since drinking water standards tend to be less stringent than human health criteria, it would seem that in some cases the draft permit would have tighter limits. Furthermore, the limits in the draft permit were calculated using 25% of the river's allocation. The numbers tabulated using EPA's methodology were calculated with 100% of the river's allocation.

Since there seems to be several discrepancies between the limits established in the draft permit and those developed using EPA's methodology, further information and justification of the derivation of the limits in the proposed draft is needed before the draft permit is approved by EPA.

Best Available Technology

As stated above, the Clean Water Act requires the permitting authority to establish effluent limitations which, at a minimum, are achievable through the application of the best available technology. EPA has not promulgated guidelines

for treatment of contaminated groundwater which defines the best available technology and achievable effluent limitations. Thus, this determination must be made using best professional judgment (BPJ).

SRSNE proposed that steam stripping was the best available technology for treating their process wastewater. For the contaminated groundwater, they proposed air stripping. Initially they proposed to utilize two air stripping towers in series and later proposed to utilize one large, on-site cooling tower.

The draft permit acknowledges this technology as BAT and has required a 68% removal efficiency. EPA is uncertain as to how this efficiency was obtained. SRSNE performed a treatability study, using their own effluent, which demonstrated an average removal efficiency of 98% (See Attachment C, Tables 1 and 2). Literature discussing air stripping design also demonstrates removal efficiencies of at least 90% for VOC's which comprise the majority of SRSNE's groundwater contamination (See Attachment D Tables 3 and 5). According to EPA's treatability manual, steam stripping is also capable of achieving high efficiencies. Removal efficiencies decrease at higher flow rates. SRSNE will be treating a maximum of 0.235 mgd of groundwater per day. As seen on Attachment D, table 3, greater than 90% removal is still achievable at flowrates greater than 1 mgd with the actual efficiency dependent upon cost.

Temperature also affects the efficiency of air stripping. If SRSNE demonstrates significant variations from the higher efficiency during winter months, then perhaps seasonal requirements should be established. Another site which utilizes air stripping to treat groundwater proposed to store some of the groundwater until the summer when they could achieve a higher efficiency. This approach also enabled them to reduce the flow through the treatment system in the winter which gives better removal efficiency.

In conclusion, using best professional judgment, EPA is not certain that air stripping with the on-site cooling tower at 68% removal represents BAT. The permit should require at least 90% removal. EPA does not have enough information, such as influent concentrations to the treatment facilities, to calculate numerical effluent limitations based on BAT at 90% removal. However, if the numerical limits are more stringent than those on Attachment B, the CWA requires that they be established. If significant seasonal fluctuations develop, then perhaps another means or additional treatment should be employed.

Clarity and Typographical Errors

Attachment E is a copy of the draft permit with typographical errors indicated. Attachment F is a flow diagram established to clarify the monitoring requirements and sampling locations.

From this diagram, it is evident that some constituents, such as the well overflow and miscellaneous package dripping, have not been included in the appropriate permitted outfalls.

Item #4 on page 6 requires the stormwater collected in the diked facilities be introduced into the groundwater treatment system. This provision should be clarified by adding stormwater to the list of constituents from outfall 001A. A provision should also be added requiring sampling during a storm event.

Item #3 on page 5 is unclear. It states that "If permit requirements are met for one quarter, the frequency of monitoring shall be reduced to monthly until 75% of the permit effluent limitations are reached". This implies that as long as the permittee is meeting 75% of the effluent limitations, they will only be required to monitor on a monthly basis? The last part of the sentence (until 75% ...) should be removed.

Summary

The draft permit developed for Solvents Recovery Services of New England in Southington by the Connecticut DEP is unacceptable to the EPA. The derivation of the effluent limits is not consistent with EPA's derivation. According to the Clean Water Act, at a minimum the facility must be required to meet limits which reflect those achievable through the application of the best available technology. SRSNE proposes to use steam and air stripping to treat their wastewater. This type of technology is capable of achieving greater than 90% removal and SRSNE should be required to achieve this efficiency. In addition, the CWA requires that the discharge does not violate water quality standards. Thus the limits must protect both aquatic organisms and human health. Therefore, EPA recommends that the limits should be at least as stringent as those found in Attachment B. Limits less stringent than these need further justification for EPA approval.

ATTACHMENT A

0015523

METHODOLOGY FOR EFFLUENT LIMITATION DEVELOPMENT

Mass Balance: $Q_eC_e + Q_rC_r = Q_iC_i$

Where:
Q_e = effluent flow
C_e = concentration of pollutant in effluent
Q_r = river flow
C_r = concentration of pollutant in effluent
Q_i = river flow downstream from discharge
$= (Q_e + Q_r)$
C_i = concentration of pollutant instream after dilution, equal to EPA criteria

Assumptions:

1. $C_r = 0$

2. During critical conditions

$Q_e = Q_{max} = 0.235$ mgd
$Q_r = Q_{7Q10} = 2.2$ cfs $= 1.42$ mgd

3. During average conditions

$Q_e = Q_{av} = 0.235$ mgd
$Q_r = Q_{30Q2} = 10.0$ cfs $= 6.46$ mgd

Resulting Equation: $C_e = \frac{(Q_e + Q_r)}{Q_e} \times C_i$

Sample Calculation: Benzene

1. Acute aquatic instream criteria = 5300 ug/l
2. Chronic " " " = No data
3. Drinking Water Standard = 5 ug/l
4. Human Health at 10^{-5} risk = 6.6 ug/l

$$\text{Daily Maximum Limit} = (5300 \text{ ug/l}) \times \frac{(0.235 + 1.42)}{0.235} = 37 \text{ mg/l}$$

$$\text{Monthly Average Limit} = (5 \text{ ug/l}) \times \frac{(0.235 + 6.46)}{0.235} = 0.14 \text{ mg/l}$$

EPA would establish the limit based on the drinking water standard of 0.14 mg/l.

Converting this concentration based limit to a mass limit:

$$(0.14 \text{ mg/l})(0.235 \text{ mgd})\frac{(3785 \text{ m}^3/\text{day})}{1 \text{ mgd}}\frac{(1000 \text{ l})}{1 \text{ m}^3}\left(\frac{1 \text{ kg}}{1 \times 10^6 \text{ mg}}\right) = 0.12 \text{ kg/day}$$

TABULATION OF EFFLUENT LIMITATIONS

(1) Instream acute aquatic water quality criteria.

(2) Effluent limitation necessary to meet acute water quality criteria.

(3) Instream chronic water quality criteria.

(4) Effluent limitation necessary to meet chronic water quality criteria.

(5) Drinking water standards.

a. Existing maximum contaminant level (MCL)
b. Proposed maximum contaminant level (PMCL)
c. Proposed maximum contaminant level goal (PMCLG)
d. Existing MCL for total trihalomethanes
e. Life time health advisory
f. Interim guidance calculations based on reference dose levels for chronic exposure.
g. Cancer risk levels at 1 in 10^5 risk.

(6) Effluent limitation necessary to meet drinking water standards.

(7) Human health criteria at 1 in $1x10^5$ risk.

(8) Effluent limitation necessary to meet the human health criteria.

(9) Effluent limitation established by EPA, concentration based.

(10) Effluent limitation established by EPA, mass based.

(11) Effluent limitation established in draft permit, mass based.

(12) Must base limit on human health criteria at 10^{-5} risk.

(13) Must base limit on drinking water standards.

(14) Must base limit on acute aquatic water quality criteria.

(15) Must base limit on chronic aquatic water quality criteria.

NC No established criteria
* Human health criteria based on toxicity data without calculation of risk.

NOTE: EPA does not have enough information on the influent concentrations to the treatment facilities to establish effluent limitations based on BAT at 90% removal. If the limits based on BAT are more stringent than those tabulated, EPA would establish them instead.

TABULATION OF EFFLUENT LIMITATIONS

Pollutant	(1) ug/l	(2) mg/l	(3) ug/l	(4) mg/l	(5) ug/l	(6) mg/l	(7) ug/l	(8) mg/l	(9) mg/l	(10) kg/day EPA	(11) kg/day DRAFT	COMMENT
Acetone	NC	–	NC	–	[f]700	20.0	NC	–	20.0	17.7	15.3	OK
Acrolein	68	0.48	21	0.60	NC	–	*320	9.1	0.48	0.43	0.13	OK
Acrylonitrile	7550	53	2600	74	NC	–	0.58	0.017	0.017	0.015	0.67	NOT OK, (12)
Barium	NC	–	NC	–	[a]1000	28.5	NC	–	28.5	25.4	6.13	OK
Benzene	5300	37	NC	–	[a]5.0	0.14	6.6	0.19	0.14	0.12	0.77	NOT OK, (13)
Bromomethane	–	–	–	–	–	–	–	–	–	–	–	See Combined Halomethanes
Bromoform	NC	–	NC	–	[d]100	2.85	–	–	2.85	2.5	0.10	OK
Butyl Acetate	NC	–	NC	–	NC	–	NC	–	–	–	0.19	Based on BAT
Carbon Tetrachloride	35200	248	NC	–	[a]5.0	0.14	4.0	0.11	0.14	0.12	0.13	OK
Monochlorobenzene	250	1.8	50	1.4	[c]60	1.70	*488	13.9	1.4	1.2	0.31	OK
Chloroethane	NC	–	NC	–	NC	–	NC	–	–	–	0.94	Based on BAT
Chloromethane	–	–	–	–	–	–	–	–	–	–	–	See Combined Halomethanes
2-Chlorovinylether	238000	1676	NC	–	NC	–	0.3	0.009	0.009	0.008	0.75	NOT OK, (12)
Chloroform	NC	–	NC	–	[d]100	2.85	–	–	2.85	2.5	0.30	OK
Chromium	16	0.11	11	0.31	[a]50	1.42	*50	1.42	0.11	0.098	0.27	NOT OK, (14)
Combined Halomethanes	11000	77	NC	–	NC	–	1.9	0.054	0.054	0.048	0.30	NOT OK, (12)
Copper	6.5	0.046	9.2	0.26	[c]1300	37.0	NC	–	0.046	0.041	0.13	NOT OK, (14)

TABULATION OF EFFLUENT LIMITATIONS

EPA DCAPT

Pollutant	(1) ug/l	(2) mg/l	(3) ug/l	(4) mg/l	(5) ug/l	(6) mg/l	(7) ug/l	(8) mg/l	(9) mg/l	(10) kg/day	(11) kg/day	COMMENT
Cyclohexane	NC	-	NC	-	NC	-	NC	-	-	-	0.19	Based on BAT
Dibromochloromethane	-	-	-	-	d 100	2.85	-	-	2.85	2.5	0.3**	OK, **Limit for combined halometh.
Methyl Isobutyl Ketone	NC	-	NC	-	f 350	10.0	NC	-	10.0	8.9	3.82	OK
Nickel	790	5.56	88	2.50	e 150	4.3	*13.4	0.38	0.38	0.34	0.34	OK
4-Nitrophenol	230	1.62	150	4.27	NC	-	NC	-	1.62	1.4	0.92	OK
Phenol	10200	72	2360	67.2	f 280	8.0	*3500	100	8.0	7.1	15.7	NOT OK, (13)
Tetrachloroethane	9320	67	2400	68.4	NC	-	1.7	0.048	0.048	0.043	0.20	NOT OK, (12)
Tetrachloroethylene	5280	37	840	24.0	e 10	0.28	8.0	0.23	0.23	0.20	5.15	NOT OK, (12)
Tetrahydrofuran	NC	-	NC	-	NC	-	NC	-	-	-	8.80	Based on BAT
1,1,1-Trichloroethane	18000	127	NC	-	a 200	5.7	*18400	524	5.7	5.0	5.75	NOT OK, (13)
1,1,2-Trichloroethane	18000	127	2400	68.4	NC	-	6.0	0.17	0.17	0.15	0.80	NOT OK, (12)
Trichloroethylene	45000	317	21900	624	a 5.0	0.14	27	0.77	0.14	0.12	1.54	NOT OK, (13)
Trichlorofluoromethan	-	-	-	-	-	-	-	-		-	-	See Combined Halomethanes
2,4,6-Trichlorophenol	NC	-	NC	-	g 18	0.51	NC	-	0.51	0.46	5.94	NOT OK, (13)
Toluene	17500	123	NC	-	c 2000	57.0	*14300	407	57.0	50.7	3.06	OK
Vinyl Chloride	NC	-	NC	-	a 2.0	0.057	20	0.57	0.057	0.051	10.0	NOT OK, (13)
Xylenes	NC	-	NC	-	c 440	12.5	NC	-	12.5	11.1	1.92	OK
1,1-Dichloroethane	118000	831	20000	570	NC	-	9.4	0.27	0.27	0.24	4.65	NOT OK, (12)

TABULATION OF EFFLUENT LIMITATIONS

EPA DRAFT

Pollutant	(1) ug/l	(2) mg/l	(3) ug/l	(4) mg/l	(5) ug/l	(6) mg/l	(7) ug/l	(8) mg/l	(9) mg/l	(10) kg/day	(11) kg/day	COMMENT
1,2-Dichloroethane	118000	831	20000	570	[a] 5.0	0.14	9.4	0.268	0.14	0.12	4.65	NOT OK, (13)
1,1-Dichloroethylene	11600	82	NC	-	[a] 7.0	0.20	3.3	0.09	0.20	0.18	0.18	OK
Trans 1,2-Dichloro-ethylene	11600	82	NC	-	[c] 70	2.00	NC	-	2.00	1.8	0.71	OK
Cis 1,3-Dichloro-propene	23000	162	5700	162	NC	-	*87	2.48	2.48	2.2	1.49	OK
Trans 1,3-Dichloro-propene	23000	162	5700	162	NC	-	*87	2.48	2.48	2.2	1.49	OK
1,2-Dichloropropane	23000	162	5700	162	[c] 6.0	0.17	*87	2.48	0.17	0.15	0.95	NOT OK, (13)
2,4-Dimethyl phenol	2120	15	NC	-	NC	-	*400	11.4	11.4	10.1	0.13	OK
2,4-Dinitrotoluene	330	2.3	230	6.6	NC	-	1.1	0.031	0.031	0.028	1.41	NOT OK, (12)
1,4-Dioxane	NC	-	NC	-	[g] 70	2.0	NC	-	2.0	1.8	1.52	OK
Ethylbenzene	32000	225	NC	-	[c] 680	19.4	*1400	40.0	19.4	17.3	1.96	OK
Hexachloroethane	980	6.9	540	15.4	NC	-	19	0.54	0.54	0.48	3.31	NOT OK, (12)
Isophorone	117000	824	NC	-	[f] 1050	30.0	5200	148	30.0	26.7	7.17	OK
Lead	34	0.24	1.3	0.037	[a] 50	1.4	50	1.4	0.037	0.033	0.10	NOT OK, (15)
Isopropyl Alcohol	NC	-	NC	-	NC	-	NC	-	-	-	38.4	Based on BAT
Methylene Chloride	NC	-	NC	-	[f] 350	10.0	175	5.0	5.0	4.4	0.48	OK
Methyl Ethyl Ketone	NC	-	NC	-	[e] 170	4.8	NC	-	4.8	4.3	38.4	NOT OK, (13)
Iron	NC	-	NC	-	NC	-	NC	-	-	-	9.2	Based on BAT

ATTACHMENT C

0015528

TABLE 1
SRS COOLING TOWER
TREATABILITY STUDY
WELL WATER SPIKED WITH VOLATILE ORGANICS[1]

	Thursday, May 26, 1983 Feed Rate 50 gpm			Friday, May 27, 1983 Feed Rate 25 gpm		
	Influent (ppb)	Blowdown (ppb)	% Removal	Influent (ppb)	Blowdown (ppb)	% Removal
Methylene Chloride	11,350.5	201.85 (15)	98.2	11,502.0	136.43 (15)	98.8
1,1,1-Trichloroethane	9,252.5	102.8 (180)	98.9	16,049.5	99.8 (180)	99.4
Trichloroethylene	6,702.0	78.9 (15)	98.8	14,064.5	108.83 (15)	99.2
Toluene	3,041.0	7.95 (600)	99.7	8,333.5	57.33 (600)	99.4

[1]well water was spiked with contaminants shown in table above.

TABLE 2
SRS WELL WATER AS IS FROM
ON-SITE PRODUCTION WELL

	Wednesday, May 25, 1983 Feed Rate 50 gpm			Tuesday, May 24, 1983 Feed Rate 25 gpm		
	Influent (ppb)	Blowdown (ppb)	% Removal	Influent (ppb)	Blowdown (ppb)	% Removal
Methylene Chloride	126.8	11.6 (15)	90.8	101.1	<10 (15)	100
1,1-Trichloroethylene	157.9	<10	100	146.5	<10	100
1,1-Trichloroethane	27.9	<10	100	23.9	<10	100
Trans 1,2-Trichloroethylene	760.1	44.8	94.1	583.9	<10	100
1,1,1-Trichloroethane	2,123	112.9 (180)	94.7	1,608	12.8 (180)	99.2
Trichloroethylene	476.4	31.8 (15)	93.3	363.7	17.7 (15)	95.1
Tetrachloroethylene	256.6	13.7 (12)	94.7	169.7	18.3 (12)	89.2
Ethylbenzene	27.3	<10	100	<10	<10	100

ATTACHMENT D

0015529

"Design and Evaluation of an Air Stripping Tower for Removal of VOC's from Groundwater", David W. Hand, Research + Technology, Sept. 1986.

TABLE 5
Average removals obtained for VOCs, TOX, and TOXFP

Compound	Average Influent Concentration µg/L	Average Effluent Concentration µg/L	Removal percent
cis-1,2-Dichloroethene	82.3	2.6	96.8
Trichloroethene	72.0	1.4	98.0
Tetrachloroethene	59.6	0.96	98.4
Toluene	30.9	0.94	96.9
Ethyl benzene	5.1	<0.3	
Xylenes*	16.6	0.60	96.4
Vinyl chloride	8.8	<0.3	
TOX (as Cl)	173.0	64.0	63.0
TOXFP (as Cl)	846.0	1092.0	-22.5

*Sum of *m*, *o*, and *p* isomers

"Designing a Cost-Efficient Air Stripping Process" N. Nirmalakhandan, Reasearch + Technology, Jan. 1987.

TABLE 3
*Summary of optimized parameters**

VOC	Removal Efficiency percent	Treatment Cost $/1000 gal (3785 L) 1 mgd (3785 m³/d)	Treatment Cost $/1000 gal (3785 L) 2 mgd (7570 m³/d)	Air-to-Water Ratio (vol/vol)	Water Loading gpm/sq ft (kg/m²s)	Packing Height ft (m)
Carbon tetrachloride	90	4.48	3.30	25	47-51 (32-35)	8.2 (2.5)
	99	7.81	5.87	25	48.5 (33.0)	16.4 (5.0)
	99.9	11.13	8.43	25	47.0 (32.0)	24.6 (7.5)
	99.99	14.44	10.99	25	47.0 (32.0)	35.0 (10.7)
Tetrachloroethylene	90	4.43	3.26	25	44-51 (30-35)	8.2 (2.5)
	99	7.72	5.80	25	47.0 (32.0)	16.4 (5.0)
	99.9	11.00	8.33	25	48.5 (33.0)	24.6 (7.5)
	99.99	14.27	10.85	25	48.5 (33.0)	35.0 (10.7)
Trichloroethylene	90	4.70	3.98	28	40.4 (27.5)	8.3 (2.6)
	99	8.30	6.29	28	40.4 (27.5)	17.3 (5.4)
	99.9	12.00	9.11	28	40.4 (27.5)	26.2 (8.0)
	99.99	15.66	11.92	28	40.4 (27.5)	36.0 (11.0)
1,1,1-Trichloroethane	90	4.92	3.74	45	40.4 (27.5)	9.1 (2.8)
	99	8.86	6.68	40	40.4 (27.5)	18.7 (5.7)
	99.9	12.82	9.73	40	40.4 (27.5)	28.8 (8.8)
	99.99	16.77	13.79	40	40.4 (27.5)	38.7 (11.8)
Chloroform	90	6.19	4.73	45	30.1 (20.5)	9.5 (2.9)
	99	11.40	8.70	50	25.2 (17.2)	19.3 (5.9)
	99.9	16.29	12.58	50	25.2 (17.2)	29.2 (8.9)
	99.99	22.90	16.41	50	25.2 (17.2)	39.7 (12.1)

*K_La estimates based on Onda's correlation for 2-in. (50.8-mm) packing; system temperature—59°F (15°C)

EPA Treatability Manual, Vol. III, page III.3.1.19-7.

CONTROL TECHNOLOGY SUMMARY FOR STEAM STRIPPING

Pollutant	Data points: Pilot scale	Data points: Full scale	Effluent concentration: Range	Effluent concentration: Median	Removal efficiency, %: Range	Removal efficiency, %: Median
Classical pollutants, mg/L:						
COD	1			170		59
TOC	7		77 - 9,800	240	4 - 79	55
Toxic pollutants, µg/L:						
Chloroform	5		ND - 65,000	ND	49 - >99	>99
1,2-Dichloroethane	6		22 - 4.4E5	42,000	70 - 99	96
1,2-Trans-dichloroethylene	5		ND - 1.3E6	16,000	9 - >99	99
Methylene chloride	5		90,000 - 3E5	130,000	54 - 87	81
1,1,2,2-Tetrachloroethane	5		ND - 78,000	33,000	99 - >99	99
Tetrachloroethylene	3		ND - 6,800	ND	37 - >99	>99
1,1,1-Trichloroethane	1			42,000		9
1,1,2-Trichloroethane	5		ND - 200	ND	98 - >99	>99
Trichloroethylene	3		ND - 34,000	ND	23 - >99	61

Blanks indicate data not available.
ND, not detected.

ATTACHMENT E

0015530

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

RECEIVED

February 19, 1987

MAY 1 8 87

CT & ME
WASTE MANAGEMENT DIVISION

Mr. John Weischel
Town Manager
Town of Southington
Southington, Ct.

Dear Mr. Weischel:

Pursuant to our recent conversation, enclosed please find the proposed NPDES permit for the Solvents Recovery Service facility and the methodology proposed by their consultant to arrive at permit limits. I have taken the liberty of forwarding a copy to Tim Taylor of GZA.

Please distribute it to appropriate local officials. I will contact you shortly to arrange a meeting to discuss its contents.

Sincerely yours,

Wesley L Winterbottom

Wesley L. Winterbottom
Principal Sanitary Engineer
WATER COMPLIANCE UNIT

WLW/pc

Enc.

Phone:

0015531

MAR 10 1987

SOUTHINGTON

NPDES PERMIT

Solvents Recovery Service of New England, Inc.
P.O. Box 362
Lazy Lane
Southington, Conn. 06489

Re: DEP/WPC-131-032
Town of Southington
Quinnipiac River Watershed

This permit is issued in accordance with Section 22a-430 of Chapter 446k, Connecticut General Statutes, and regulation adopted thereunder, as amended and Section 402(b) of the Clean Water Act, as amended, 33 USC 1251, et. seq., and pursuant to an approval dated September 26, 1973, by the Administrator of the United States Environmental Protection Agency for the State of Connecticut to administer a N.P.D.E.S. permit program.

Your application for permit issuance submitted by Solvents Recovery Service of New England, Inc. on May 9, 1984, has been reviewed by the Connecticut Department of Environmental Protection.

The Commissioner of Environmental Protection (hereinafter "the Commissioner") has found and compliance with the provisions of this permit the system installed for the treatment of [illegible] will protect the waters of the state from pollution.

DRAFT

The Commissioner, acting under Section 22a-[illegible] hereby permits Solvents Recovery Service of New England, Inc. to discharge treated groundwater, non-contact cooling water, steam condensate, stormwater, well overflow and boiler blowdown in accordance with the following conditions:

1. The wastewater shall be collected, pretreated and discharged in accordance with the plans and specifications approved by the Director of Water Compliance dated October 23, 1985 and

2. The discharges described in this permit shall not exceed and shall otherwise conform to the specific terms and general conditions specified herein:

A. Discharge Serial No. 001
Description: Recovered groundwater (on-site and off-site systems) non-contact steam condensate, diked and non-diked stormwater, contact steam condensate, well overflow, boiler blowdown, misc. package dripping.
(Code 1090000)
Receiving Stream: Quinnipiac River *Basin Code *
Present/Future Water Quality Standard: Bc/Bc
Average Daily Flow: 236,000 gallons per day

B. Discharge Serial No. 001A
Description - Recovered groundwater (on-site and off-site recovery systems), contact steam condensate ~~and~~, well overflow, and diked stormwater after treatment.
Average Daily Flow - 235,000 gallons per day

Parameter	Code	Maximum Daily Quantity
*Acetone	851	15.3 kg/day
Acrolein	797	0.13 kg/day
Acrylonitrile	780	0.67 kg/day
*Barium	104	6.13 kg/day
Benzene	855	0.77 kg/day
Bromomethane	425	** See Combined Holomethanes
Bromoform	424	0.10 kg/day
*Butyl Acetate	856	0.19 kg/day
Carbon Tetrachloride	426	0.[illegible] kg/day
Chlorobenzene	427	0.[illegible] kg/day
Chloroethane	429	[illegible] kg/day
Chloromethane	600	See Combined Holomethanes
2-Chloroethylvinylether	466	0.[illegible] kg/day
Chloroform	430	0.30 kg/day
*Chromium III	109	0.27 kg/day
Combined Halomethanes	600	0.30 kg/day
*Copper	111	0.13 kg/day
Cyclohexane	600	0.19 kg/day
Dibromochloromethane	428	** See Combined Holomethanes
1,1-Dichloroethane	441	4.65 kg/day
1,2-Dichloroethane	447	4.65 kg/day
1,1-Dichloroethylene	443	0.035 kg/day
*Trans-1,2-Dichloroethylene	445	0.71 kg/day
1,2-Dichloropropane	446	0.95 kg/day
Cis-1,3-Dichloropropene	450	1.49 kg/day
Trans-1,3-Dichloropropene	451	1.49 kg/day
*2,4-Dimethylphenol	822	0.13 kg/day
*2,4-Dinitrotoluene	600	1.41 kg/day
1,4-Dioxane	890	1.52 kg/day
Ethyl Benzene	863	1.96 kg/day
*Hexachloroethane	455	3.31 kg/day
*Isophorone	600	7.17 kg/day
*Isopropyl Alcohol	600	38.4 kg/day
*Iron	113	9.2 kg/day
*Lead	114	0.10 kg/day
*Methylene Chloride	454	0.48 kg/day
*Methyl Ethyl Ketone	870	38.4 kg/day

*Methyl Isobutyl Ketone	869	3.82 kg/day
*Nickel	119	0.34 kg/day
*4-Nitrophenol	829	0.92 kg/day
*Phenol	821	15.7 kg/day
1,1,2-Tetrachloroethane	461	0.20 kg/day
*Tetrachloroethylene	458	5.15 kg/day
Tetrahydrofuran	600	8.80 kg/day
1,1,1-Trichloroethane	460	5.75 kg/day
1,1,2-Trichioroethane	600	0.80 kg/day
Trichloroethylene	462	1.54 kg/day
Trichlorofluoromethane	466	** See Combined Halomethanes
*2,4,6-Trichlorophenol	468	5.94 kg/day
Toluene	825	3.06 kg/day
Vinyl Chloride	881	10.0 kg/day
Xylenes	884	1.92 kg/day
*Zinc	127	9.60 kg/day

1) The pH of the discharge shall not be less than 6.0 or greater than 9.0 (Code 609).

2) The discharge shall not contain or cause in the receiving stream a visible oil sheen or floating solids.

3) The discharge shall not cause visible discoloration or foaming in the receiving waters beyond any zone of influence as provided in the "Connecticut Water Quality Standards and Criteria" as amended.

4) The temperature of the discharge shall not increase the temperature of the receiving stream above 85°F or raise the normal temperature of the receiving stream more than 4°F beyond any zone of influence as provided in the "Connecticut Water Quality Standards and Criteria" as amended.

5) (Parameters with a * only) - The air stripping discharges shall be required to not exceed the maximum daily mass values specified above.

6) (Parameters without * only) - The air stripping discharges shall be required to meet the maximum daily mass values specified above ~~or~~ and the removal of TVO must be greater than 68%. TVO is defined as all compounds without *.

Should be 90%

C. Discharge Serial No. 001A1
Description - Contact Steam Condensate
Average Daily Flow - 5,000 gallons per day

D. Discharge Serial No. 001A2
Description - Recovered on-site groundwaters, well overflow (treated by air stripping).
Average Daily Flow - 30,000 gallons per day

E. Discharge Serial No. 001A3
Description - Recovered off-site groundwaters (treated by air stripping) and diked stormwater runoff.
Average Daily Flow - 200,000 gallons per day.

F. Discharge Serial No. 001B
Description - Non-contact steam condensate, miscellaneous packing drippage, boiler blowdown, stormwater runoff.
Average Daily flow - 1,000 gallons per day

3. The discharges shall be monitored and results reported to the Director of Water Compliance within six weeks following the month in which samples are taken according to the following schedule:

A. Discharge Serial No. 001A1 (Effluent)
Discharge Serial No. 001A2 (Effluent)
Discharge Serial No. 001A2 (Influent)
Discharge Serial No. 001A3 (Effluent)
Discharge Serial No. 001A3 (Influent)

Parameter	Code	Minimum Frequency of Sampling	Sample Type
Acetone	851	Twice per month	Composite
Acrolein	797	Twice per month	Composite
Acrylonitrile	780	Twice per month	Composite
Benzene	855	Twice per month	Composite
Bromomethane	425	Twice per month	Composite
Bromoform	424	Twice per month	Composite
Butyl Acetate	856	Twice per month	Composite
Carbon Tetrachloride	426	Twice per month	Composite
Chlorobenzene	427	Twice per month	Composite
Chloroethane	429	Twice per month	Composite
Chloromethane	600	Twice per month	Composite
2-Chlorovinylether	466	Twice per month	Composite
Chloroform	430	Twice per month	Composite
Combined Halomethanes	600	Twice per month	Composite
Cyclohexane	600	Twice per month	Composite
Dibromochloromethane	428	Twice per month	Composite
1,1-Dichloroethane	441	Twice per month	Composite
1,2-Dichloroethane	447	Twice per month	Composite
1,1-Dichloroethylene	443	Twice per month	Composite
Trans-1,2-Dichloroethyle	445	Twice per month	Composite
1,2-Dichloropropane	446	Twice per month	Composite
Cis-1,3-Dichloropropene	450	Twice per month	Composite
Trans-1,3-Dichloropropene	451	Twice per month	Composite
1,4-Dioxane	890	Twice per month	Composite
Ethyl Benzene	863	Twice per month	Composite
Hexachloroethane	455	Twice per month	Composite
Isophorone	600	Twice per month	Composite
Isopropyl Alcohol	600	Twice per month	Composite
Methylene Chloride	454	Twice per month	Composite
Methyl Ethyl Ketone	870	Twice per month	Composite
Methyl Isobutyl Ketone	869	Twice per month	Composite

Tetrachloroethylene	458	Twice per month	Composite
1,1,2,2-Tetrachloroethane	461	Twice per month	Composite
Tetrahydrofuran	600	Twice per month	Composite
1,1,1-Trichloroethane	460	Twice per month	Composite
1,1,2-Trichloroethane	600	Twice per month	Composite
Trichloroethylene	462	Twice per month	Composite
Trichlorofluoromethane	466	Twice per month	Composite
Toluene	825	Twice per month	Composite
Vinyl Chloride	881	Twice per month	Composite
Xylenes	884	Twice per month	Composite

(1) The permittee shall record the total flow (Code #) and the number of hours of discharge (Code #) for each day of sample collection.

(2) All monitoring reports submitted for Discharge Serial Nos. 001A2 and 001A3 shall contain the kg/day being discharged for each pollutant discharged and if pollutants exceed the maximum kilogram per day specified above shall include the percent removal for TVO being achieved by the air stripping treatment systems and an explanation of why the maximum kilograms per day criteria are being exceeded.

(3) If permit requirements are met for one quarter, the frequency of monitoring shall be reduced to monthly. ~~until 75% of permit effluent limitations are reached.~~ Following a violation, the frequency of sampling shall revert back to twice per month until the permit is met for one quarter, at which time sampling could again be reduced to monthly.

(using) move statement

(4) If the influent loading drops below the permitted effluent loading for 3 consecutive readings, then the sampling frequency of the influent shall be reduced to monthly. In the event there is a subsequent increase in influent loading above permitted effluent loadings, the previous sampling frequency shall be reinstated until influent loading again drops to below the permitted effluent loading for 3 consecutive readings.

(5) When measured effluent loadings fall below 10% of the permitted effluent loading for four consecutive readings, sampling frequency for effluent samples shall be reduced to monthly. In the event that there is a subsequent increase in effluent loading in a month to above 10%, the previous sampling frequency shall be reinstated until effluent loading again drops below 10% of permitted loading for four consecutive readings.

B. Discharge Serial No. 001A (Combined Effluent)

Parameter	Code	Minimum Frequency of Sampling	Sample Type
Barium	104	Twice per month	Composite
Chromium III	109	Twice per month	Composite
Copper	111	Twice per month	Composite
2,4-Dimethylphenol	822	Twice per month	Composite
2,4-Dinitrotoluene	600	Twice per month	Composite
# ~~Hexachloroethane~~	~~455~~	~~Twice per month~~	~~Composite~~
~~Isophorone~~	~~600~~	~~Twice per month~~	~~Composite~~
Iron	113	Twice per month	Composite
Lead	114	Twice per month	Composite
Nickel	119	Twice per month	Composite
4-Nitrophenol	829	Twice per month	Composite
Phenol	821	Twice per month	Composite
2,4,6-Trichlorophenol	468	Twice per month	Composite
Zinc		Twice per month	Composite

(1) The permittee shall record the total flow (Code *) and the number of hours of discharge (Code *) for each day of sample collection.

(2) If permit requirements are met for one quarter, the frequency of monitoring shall be reduced to monthly ~~until 75% of the permit effluent limitations are reached~~. Following a violation, the frequency of sampling shall revert back to twice per month until the permit is met for one quarter, at which time sampling would again be reduced to monthly.

DRAFT

(3) When measured effluent loadings fall below 10% of the permitted effluent loading for four consecutive readings, sampling frequency for effluent samples shall be reduced to monthly. In the event that there is a subsequent increase in effluent loading in a month to above 10%, the previous sampling frequency shall be reinstated until effluent loading again drops below 10% of permitted loading for four consecutive readings.

4. Stormwater collected in diked facilities shall be introduced into the groundwater treatment system for treatment. Storm water from non-diked areas shall be managed in accordance with the engineering report submitted by Solvents Recovery Service and approved by this Department on October 3, 1979.

5. The permittee shall by submit for the review and approval of the Commissioner, the results of the in-stream water quality study. Such report shall include recommendations, if necessary for provision of a higher degree of treatment and/or process modifications.

6. The permittee shall by submit for the review and approval plans and specifications for the provision of any required higher degree of treatment and/or process modifications.

* Effluent samples from 001A1, 001A2 + 001A3 will be analyzed for these two compounds (See 3. A. on page 4). Why is another analysis required.

7. The permittee shall by verify to the Commissioner that construction of any required additional treatment facilities and/or process modifications has been started.

8. The permittee shall by verify to the Commissioner that construction of any required additional treatment facilities and/or process modifications has been completed.

9. The effluent limitations specified in paragraph 2 above are valid for such period of time when the Town of Southington is not actively utilizing town wells #4 and #6 for drinking water supply. If the Town of Southington serves notification on SRSNE and this Department of their intent to reactivate town well or wells #4 and/or #6, the permittee shall demonstrate to the satisfaction of the Commissioner within 60 days of such notification that Discharge Serial Number 001 will not cause the exceedance of any applicable Volatile Organic Chemical Action Levels in the well production water. If the Commissioner determines that any applicable Volatile Organic Chemical Action Levels may be exceeded, the permittee shall submit to the Commissioner of Environmental Protection within 60 days, a report which outlines the changes ~~of the~~ necessary to achieve a discharge quality that will not interfere with the use of well #4 and #6. This report shall include a proposed schedule for implementation. Further, this permit may be modified to reflect more stringent effluent limitations necessary to ensure acceptable water quality in the town wells.

10. The permittee shall, on a quarterly basis for the first year of operation of the on-site and off-site groundwater recovery systems, submit groundwater recovery system, submit to the Commissioner of Environmental Protection a report which summarized the effluent monitoring for the preceeding three (3) months, in both a narrative and graphical form, and propose any modifications or revisions of operating procedures which will insure strict adherence to the effluent limitations of this permit. Should it be determined at the end of the first year of operation that the treatment technology in place cannot achieve the effluent limitations of this permit, the permittee shall submit for the review and approval of the Commissioner of Environmental Protection, a report which recommends alternative technology that will insure achievement of said effluent limitations to include a proposed compliance schedule for installation of such additional facilities.

11. In addition to the monitoring required by Paragraph 3 above the permittee shall supply to the Director of Water Compliance flow readings in cubic feet per second of the Quinnipiac River at the Lazy Lane Bridge, on the days that twice per month sampling occurs. In addition, the permittee will periodically monitor flow in the Quinnipiac in order to determine when river flow decreases to ten cubic feet per second or less. The purpose of this is to allow the permittee to adjust treatment system operation to meet reduced permitted loadings when the flow drops below 10 cfs.

often is odically

12. When the treatment system influent concentrations and quantities drop below permitted effluent levels, a report shall be submitted for the review and approval of the Commissioner evaluating the removal efficiencies required.

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This permit shall be considered as the permit required by Section 402 of the Federal Water Pollution Control Act and Section 22a-430 of the Connecticut General Statutes and shall expire on

This permit shall be subject to the following Sections of the Regulations of Connecticut State Agencies which are hereby incorporated into this permit:

Section 22a-430-3 General Conditions

(a)Definitions*
(b)General
(c)Inspection and Entry
(d)Effect of a Permit
(e)Duty to Comply
(f)Proper Operation and Maintenance
(g)Sludge Disposal
(h)Duty to Mitigate
(i)Facility Modifications; Notification
(j)Monitoring, Records and Reporting Requirements
(k)Bypass
(l)Conditions Applicable to POTWs
(m)Effluent Limitation Violations (Upsets)
(n)Enforcement
(o)Resource Conservation
(p)Spill Prevention and Control
(q)Instrumentation, Alarms, Flow Recorders
(r)Equalization

22a-430-4 Procedures and Criteria

(a)Duty to Apply
(b)Duty to Reapply
(c)Application Requirements
(l)Establishing Effluent Limitations and Conditions
(m)Case by Case Determinations
(o)Permit Transfer
(q)Variances
(r)Secondary Treatment Requirements
(s)Treatment Requirements for Metals and Cyanide
(t)Discharges to POTWs - Prohibitions
*except as superseded by the following definitions:

"Grab Sample Average" means the arithmetic average of all grab sample analyses for the day of sample collection. Grab samples shall be collected at least once every four hours over a full operating day for as long as the discharge exists on that day (minimum of two grab samples per day).

"Maximum Daily Concentration" means the maximum concentration as measured in a daily composite sample or grab sample average.

"Average Monthly Concentration" means the average concentration of a substance as measured by the average of all daily composite samples or grab sample averages taken during any calendar month.

Your attention is especially drawn to the notification requirements of subsection (i)(2), (i)(3), (j)(6), (j)(7)(C), (j)(8)(C), (D), (E), and (F), (k)(3) and (4) and (l)(2) of Section 22a-430-3.

The Commissioner reserves the right to make appropriate revisions to the permit in order to establish any appropriate effluent limitations, schedules of compliance, or other provisions which may be authorized under the Clean Water Act or the Connecticut General Statutes or regulations adopted thereunder, as amended. The permit as modified or renewed under this paragraph may also contain any other requirements of the Clean Water Act or Connecticut General Statutes or regulations adopted thereunder then applicable.

Entered as a Permit of the Commissioner this ____ day of _____, 19__.

DRAFT

Stanley J. Pac
Commissioner

State Application No.*
NPDES CT*

THE DETERMINATION OF EFFLUENT DISCARGE LIMITS
FOR SOLVENTS RECOVERY SERVICE OF NEW ENGLAND

The discharge limits for the combined flow of the SRSNE Facility (001) were determined using the methodology developed by the Connecticut Department of Environmental Protection. The criteria used in the selection of allowable concentrations in the Quinnipiac River were chronic, human health, or SNARL data, if available. It should be noted that some of these criteria have not been developed by the U.S. Environmental Protection Agency for many compounds. In cases where no criteria exists, the criteria used was best available technology, drinking water standards, or analytical laboratory detectable limits. An allocation of 25% of the river was used in the calculation of limits.

what about acute affects?

The chronic standards are based upon ambient water quality criteria developed by the EPA to protect fresh water aquatic life. The Quinnipiac River flow rate that was used in conjunction with chronic criteria to determine the allowable loading was 10 cubic feet per second (10 cfs). The 10 cfs flow is an intermediate flow between the 7Q10 (2.2 cfs) and average annual flow (31.32 cfs). The intermediate flow was established by the DEP to be used with chronic criteria. If the flow in the river is less than 10 cfs, the allowable loading for parameters based upon chronic criteria will be lowered by a proportional amount. For example, if the flow in the Quinnipiac River is 7 cfs, then the discharge limit for parameters based on chronic criteria will be reduced to 70% of the permitted value for that time when the river is flowing at 7 cfs.

Human health criteria were developed by the EPA and are based upon potential effects to humans through the ingestion of contaminated water and contaminated aquatic organisms. The human health criteria were obtained from the DEP and were used in conjunction with the average annual river flow of 31.32 cfs. The average annual flow is utilized for human health criteria since it is based upon ingestion over a lifetime (average conditions). It is noted that human health criteria for the Quinnipiac River is extremely conservative and of limited

applicability since this reach of the river is not utilized for recreational purposes where large quantities of water or fish could be ingested on a regular basis over a lifetime.

The Suggested No Adverse Response Levels (SNARLs) for chronic exposure were derived from the Acceptable Daily Intake values computed by the National Academy of Sciences. SNARLs assume total exposure from drinking water for a 10 kilogram child consuming 1 liter of water per day.. The river flow used in conjunction with SNARL criteria is the average annual flow of 31.32 cfs, since SNARLs are also based upon average conditions.

The developed discharge limits are summarized in Table 1, and are based upon methodology developed by the DEP. Any variations from this basic methodology are noted in Table 1.

TABLE 1
EFFLUENT DISCHARGE LIMITS
SOLVENTS RECOVERY SERVICE OF NEW ENGLAND
SOUTHINGTON, CONNECTICUT
DISCHARGE 001
(LIMITS IN KILOGRAMS/DAY)

Parameter	Discharge Limit	Comments
Acetone	15.3	Best Available Technology (No Established Criteria)
Acrolein	0.13	
Acrylonitrile	0.67	Used SNARL Instead of Human Health Criteria
Barium	6.13	
Benzene	0.77	
Bromomethane	*	
Bromoform	0.10	Used Detectable Limit (No Established Criteria)
Butyl Acetate	0.19	Used Detectable Limit (No Established Criteria)
Carbon Tetrachloride	0.13	
Chlorobenzene	0.31	Used Chronic Criteria, Not Human Health Criteria
Chloroethane	0.94	Best Available Technology (No Established Criteria)
Chloromethane	*	
2-Chlorovinylether	0.75	
Chloroform	0.30	
Chromium	0.27	
Combined Halomethanes	0.30	
Copper	0.13	
Cyclohexane	0.19	Used Detectable Limit (No Established Criteria)
Dibromochloromethane	*	

TABLE 1 (Continued)
EFFLUENT DISCHARGE LIMITS
SOLVENTS RECOVERY SERVICE OF NEW ENGLAND
SOUTHINGTON, CONNECTICUT
DISCHARGE 001
(LIMITS IN KILOGRAMS/DAY)

Parameter	Discharge Limit	Comments
Methyl Isobutyl Ketone	3.82	Best Available Technology (No Existing Criteria)
Nickel	0.34	
4-Nitrophenol	0.92	Used SNARL Instead of Human Health Criteria
Phenol	15.7	
1,1,2,2-Tetrachloroethane	0.20	
Tetrachloroethylene	5.15	Used Chronic Instead of Human Health
Tetrahydrofuran	8.80	Used Best Available Technology (SNARL Criteria Resulted in 155 Kg/Day)
1,1,1-Trichloroethane	5.75	
1,1,2-Trichloroethane	0.80	
Trichloroethylene	1.54	
Trichlorofluoromethane	*	
2,4,6-Trichlorophenol	5.94	Used Chronic Criteria Instead of Human Health
Toluene	3.06	Best Available Technology (No Established Criteria)
Vinyl Chloride	10.0	
Xylenes	1.92	Used SNARL and Annual Average Flow (No Established Criteria)

* See Combined Halomethanes

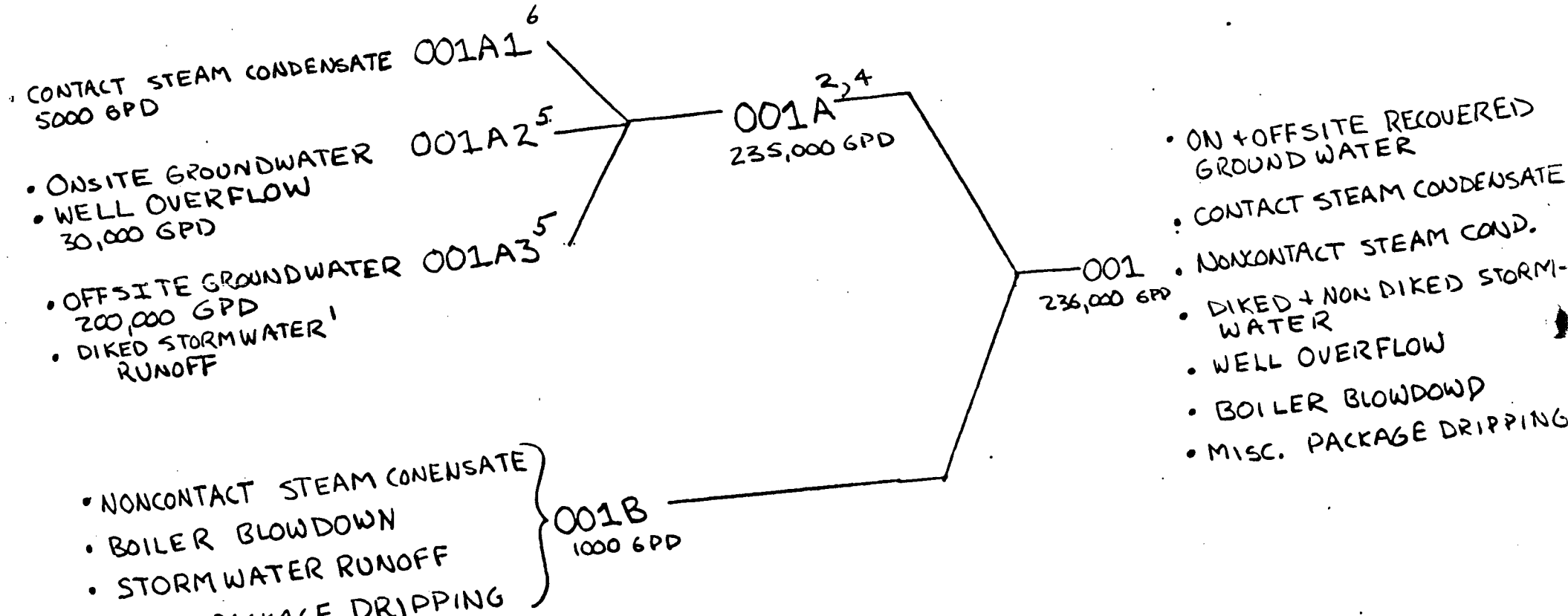
**In three limited instances, an allocation level of 50% and 100% was utilized. This allocation will still result in protection of aquatic organisms and can be verified by the In-Stream Water Quality Monitoring Program. In the event that Southington Well Nos. 4 and 6 are activated, the NPDES Permit address requirements that will have to be undertaken to protect human health.

0015544

TABLE 1 (Continued)
EFFLUENT DISCHARGE LIMITS
SOLVENTS RECOVERY SERVICE OF NEW ENGLAND
SOUTHINGTON, CONNECTICUT
DISCHARGE 001
(LIMITS IN KILOGRAMS/DAY)

Parameter	Discharge Limit	Comments
1,1-Dichloroethane	4.65	
1,2-Dichloroethane	4.65	
1,1-Dichloroethylene	0.035	
Trans-1,2-Dichloroethylene	0.71	
1,2-Dichloropropane	0.95	Used Best Available Technology, Chronic Criteria Resulted in Discharge of 34.9 Kg/Day
Cis-1,3-Dichloropropene	1.49	
Trans-1,3-Dichloropropene	1.49	
2,4-Dimethylphenol	0.13	
2,4-Dinitrotoluene	1.41	Used Chronic Criteria Instead of Human Health
1,4-Dioxane	1.52	Used 100% River Allocation**
Ethyl Benzene	1.96	
Hexachloroethane	3.31	Used Chronic Criteria Instead of Human Health
Isophorone	7.17	
Isopropyl Alcohol	38.4	50% River Allocation**
Iron	9.2	Best Available Technology (No Established Criteria)
Lead	0.10	Used Detectable Limit Instead of Chronic Criteria
Methylene Chloride	0.48	Used SNARLs and Annual Average Flow (No Established Criteria)
Methyl Ethyl Ketone	38.4	Used 50% River Allocation**

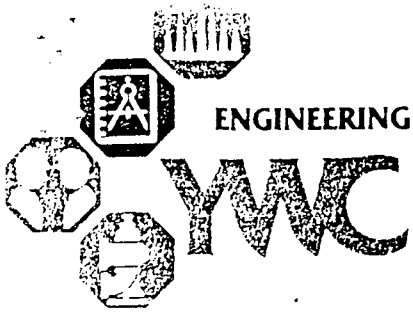
ATTACHMENT

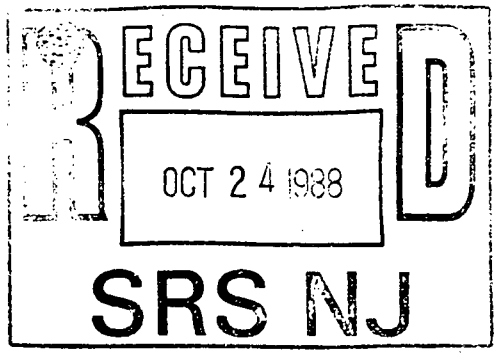


NOTES

1. ITEM 4 ON PAGE 6 OF THE PERMIT REQUIRES DIKED STORMWATER TO BE TREATED, THIS CONSTITUE SHOULD BE ADDED TO EITHER OUTFALL 001A1 OR 001A2 AS WELL AS 001A.
2. WELL OVERFLOW IS MISSING FROM LIST OF 001A CONSTITUENTS.
3. MISC. PACKAGE DRIPPING IS MISSING FROM LIST OF 001 CONSTITUENTS.
4. EFFLUENT LIMITATIONS ARE ESTABLISHED HERE.
5. INFLUENT/EFFLUENT MONITORING HERE.
6. EFFLUENT MONITORING HERE.

J.S. 10-25-8





October 17, 1988

Ms. Margaret Leshen, Chief
Connecticut Superfund Program
United States Environmental
Protection Agency
Region I
J.F.K. Federal Building
HEC 6
Boston, MA 02203

Re: Solvents Recovery Service of New England, Inc.
Shallow Well Recovery System

Dear Ms. Leshen:

This letter concerns the operability of the shallow well groundwater recovery system at the Solvents Recovery Service of New England (SRSNE) Facility in Southington, Connecticut. The operation of the system is a condition of the Consent Decree between SRSNE and the EPA, and has been re-emphasized by the EPA in the May 4, 1988 meeting and in your letters to SRSNE (dated May 25, 1988 and June 23, 1988).

The shallow well system is pumped via manifolded centrifugal pumps, with one pump for five wells. Operation of the system has been hampered because of pump failures which occurred when the wells and thus the pumps ran dry. Imbalances in the system have caused pump failures despite the utilization of throttling valves and pump timers.

The failure rate of the pumps led to an investigation of alternate pumping mechanisms. It is proposed that pneumatic pumps (Pulse Pumps manufactured by QED Environmental Systems, per attached catalog) be installed as replacements. The advantages of these pumps are that they are located in the bottom of the wells, and can run dry without damage to the pumps. The pumps require the installation of 1.5" well screens to replace the existing 1.25" well screens.

We propose, with U.S. EPA permission, to use the pneumatic pumps on a test basis in three wells and, if the pumps perform as expected, to install them in the remaining wells if appropriate. This is being proposed as a maintenance item to improve the operability of the system and ensure compliance with the conditions of the Consent Decree.

EXHIBIT 18

We would appreciate your response within two weeks in order to allow SRSNE to place orders and hopefully complete the job before winter. If you have any questions, please do not hesitate to contact me.

Very truly yours,

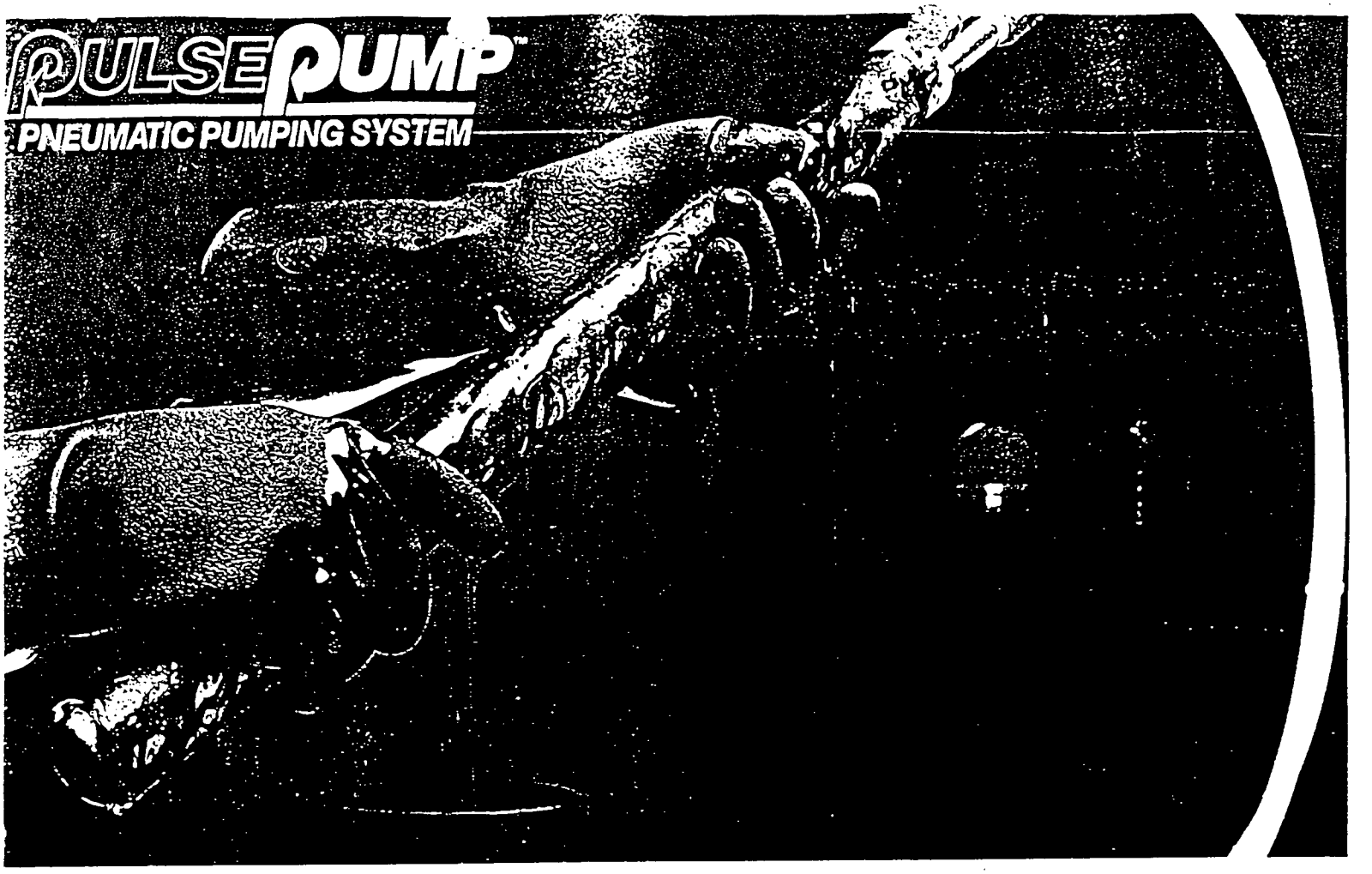
Keith E. Warner, P.E.
Project Manager

KEW:cgk
Attachment

cc: J. Anderson
D. Kiefer

PULSE PUMP™

PNEUMATIC PUMPING SYSTEM



To solve challenging groundwater cleanup and leachate pumping problems, you need a pumping system that is rugged enough to handle difficult underground tank leaks and site cleanups. And because quick action is imperative, you need equipment that is delivered fast so you can get to work right away.

The Pulse Pump System™ from QED Environmental Systems, Inc., provides continuous all-pneumatic pumping of corrosive and hazardous liquids from wells and risers as small as 2 inches in diameter. Its simple modular design and range of construction materials let you customize the system with off-the-shelf components. And the pneumatic design makes the system safe for use with potentially explosive liquids.

The simplicity, ruggedness and availability of the Pulse Pump make it the economical answer to groundwater cleanup challenges.

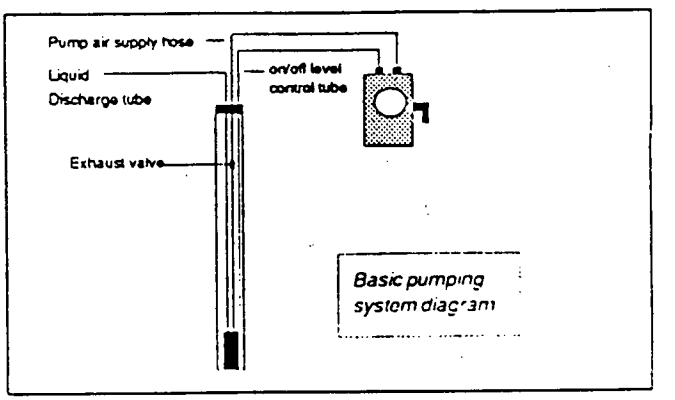
Simplicity. The Pulse Pump system is easy to install. One person can set it up in minutes with snap-together tubing fittings and easy to follow directions. The simple non-electric design means that maintenance is minimal and easy.

Ruggedness. Pulse Pump components are available in a range of materials to deal with different types of hazardous liquids. Straightforward design and tough construction mean few repairs.

Availability. Because the Pulse Pump System is made up of regularly stocked components, you can select the parts you need and have them delivered quickly, usually in about a week.

Economy. Modular design keeps initial costs low, and makes replacement of parts or tubing simple. Simplicity and ruggedness mean you save on maintenance. Availability lets you deal with your cleanup problem quickly, before it gets out of control. And for added convenience, pumps are available to fit wells as small as 2 inches in diameter, so you can begin cleanup quickly, using existing monitoring wells.

Simplicity. Ruggedness. Availability. Economy. These key benefits make the Pulse Pump System the first choice for value.



Basic pumping system diagram

QED Environmental Systems, Inc.

P.O. Box 3726, Ann Arbor, MI 48106
800/624-2026 In Michigan 313/995-2547 In California 510/485-0[illegible]
Fax # 313/995-[illegible]

.0015548

Designing your system

You create your customized Pulse Pump System by selecting the pump and controller most suited to your needs. Well caps, tubing packages, exhaust valves and remote well operators are ordered to match the pump and controller models you choose.

Pumps

Pumps are available to fit wells down to 1.5" in diameter, and come in a range of materials including PVC, brass and Teflon*. These pumps are tough enough to pump solids, and can pump dry without damage.

Liquid flow rates from the pump range from 0.25 to 6.0 gallons per minute, depending on model, submergence and configuration. Flow curves are available in the application guide.

The pumps operate on the all-pneumatic gas displacement principle, which means they are intrinsically safe for pumping in explosive conditions. And all pumps can pump against 230 feet of Total Dynamic Head (TDH).

Intake screens are available for each pump model, to allow the pump to sit on the bottom of the well. A floating layer inlet attachment is available for most models to convert the pump for collection of thin floating layers in the well.

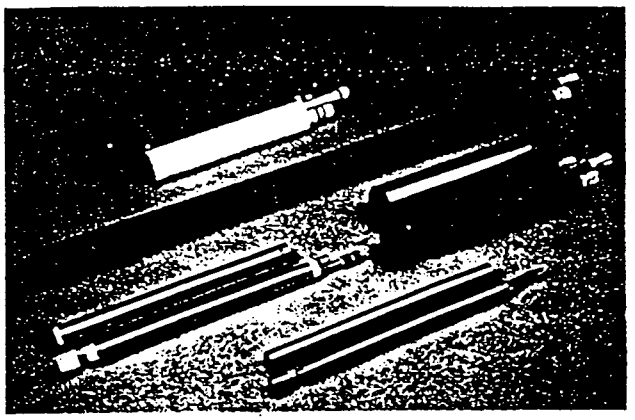
Controllers

Three controller models are available. A basic model provides continuous pumping; another features on/off level control, and a third has both on/off level control and a convenient liquid level gauge mounted on the outside of the controller case. An optional mounting bracket allows easy mounting to a vertical pipe or well casing.

With the on/off level control option, liquid level is detected by a bubbler tube placed at the desired liquid level in the well, so the pump operates only when it is needed.

Controllers feature all-pneumatic design for safe operation. They are housed in weatherproof boxes, and are reliable and easy to service. Pump refill and discharge cycles and operating pressures are adjustable, so you can easily achieve the most efficient performance from your pump.

The controller requires 3.0 SCFM at 100 psi dry air supply for maximum pump performance.



Remote Well Operator

To save you money, remote well operating devices allow a single controller to operate more than one pump in different wells. Remote well operators and exhaust valves are installed at each well, and an additional exhaust valve is installed onto the controller.

Well Caps

Caps are available standard to fit well casings 2" and larger, and to provide terminal fittings for both operating air, liquid discharge and optional on/off level control tubing. Custom caps can be designed to meet special needs. Caps for systems with two pumps in one well are also available. Pump position can be changed easily by adjusting the tubing through the cap.

Tubing

Tubing packages are available to match each pump model. Tubing comes in polyethylene, Teflon and UV-protected nylon in the appropriate sizes for each pump model.

Tubing can also be purchased separately in all materials and sizes to complete tubing runs. Various tubing fittings (Tees, Ells, Couplers, etc.) with easy-to-install connecters, are available to attach to your surface discharge and air supply plumbing systems.

Exhaust Valves

Quick exhaust valves, positioned above the well cap with 2" pump models, and on the air line beneath the well cap with 4" pump models, vent compressed air during the pump refill cycle. One is required for each pump in a system. Variations are available for different well and system configurations.

Call 1-800-624-2026 now to speak with our applications engineers about your recovery pumping needs and to receive our detailed Pulse Pump Application Guide.

*Teflon is a registered trademark of the E.I. DuPont Corporation.

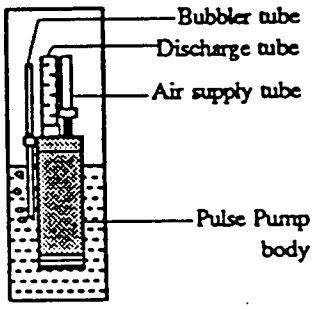
Pulse Pump™ Pneumatic Pumping System

Applications: Modular design makes *Pulse Pump* the ideal choice for many kinds of contaminated groundwater pumping. Different configurations of the system can be used for everything from leachate pumping to gasoline recovery, and from dewatering methane venting wells to pumping groundwater contaminated with chlorinated solvents. Because all components are stocked at QED, you get off-the-shelf fast delivery and competitively low prices. Contact QED applications engineers at 1-800-624-2026 for assistance in selecting the components you need. The following diagrams illustrate some of the of the ways to use the Pulse Pump Pneumatic Pumping System.

Contaminated Liquid Pumping:

Pulse Pump is shown partially submerged in a column of contaminated liquid. An optional bubbler tube and on/off level control are to the left of the pump. On/off level control is useful in risers that recover more slowly than the pump's flow rate. It insures that the pump operates only when liquid is available to pump.

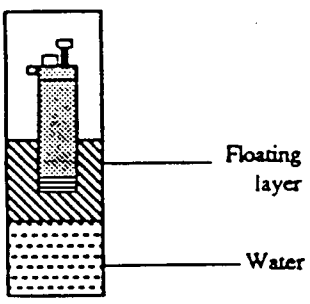
Since all liquid contacting parts can be constructed of a variety of plastics and/or metals, *Pulse Pump* can be used with a wide range of corrosive and/or organically aggressive liquids.



Thick Floating Layer Pumping:

Pulse Pump is shown here partially submerged in a floating layer. *Pulse Pump* can pump liquid down to within 4 inches of the pump bottom, allowing recovery of floating layers thicker than 6 inches. A bubbler tube and on/off level control are available if the floating layer recovers more slowly than the pump's flow rate.

Since *Pulse Pump* operates pneumatically, it is safe for explosive liquid pumping.



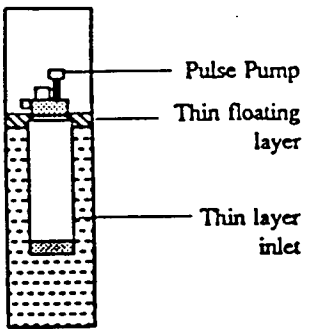
continued other side

QED Environmental Systems, Inc.
P.O. Box 3726, Ann Arbor, MI 48106
800/624-2026 In Michigan, 313/995-2547

Pulse Pump™ Pneumatic Pumping System

Thin Floating Layer Recovery:

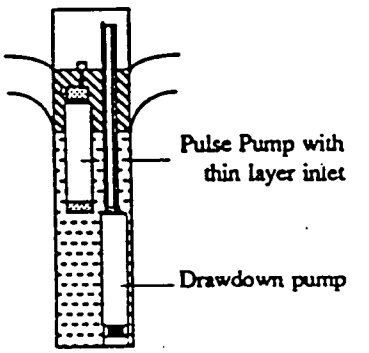
An optional thin layer recovery inlet is available for *Pulse Pump*. This attachment allows *Pulse Pump* to recover thin floating layers by moving the effective pump inlet from the bottom of the pump to the very top. The floating layer flows over the top edge of the inlet and fills *Pulse Pump*. By adjusting the number of pump cycles and the pumping duration, an economical and reliable floating layer recovery system can be configured.



Floating Layer Recovery with Drawdown Pump:

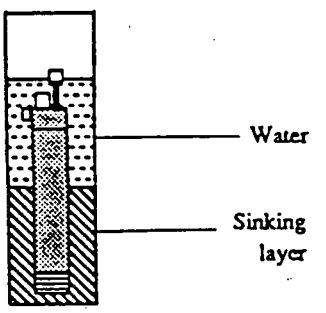
Pulse Pump, teamed with an electric submersible drawdown pump, will recover a floating layer from a high recovery well. *Pulse Pump* is moved up or down in the recovery well as needed to maximize recovery effectiveness.

Pulse Pump operates pneumatically, making it ideal for the recovery of explosive liquids.



Sinking Layer Pumping:

To pump a sinking layer, *Pulse Pump* fills from the bottom through a 2 inch screen, so that the sinking liquids fill the pump. The wide selection of materials available for the liquid contacting parts allows *Pulse Pump* to be used with most types of sinking layer organics.



QED Environmental Systems, Inc.

P.O. Box 3726, Ann Arbor, MI 48106
800/624-2026 In Michigan, 313/995-2547

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
J.F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203-2211

0015552

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

November 7, 1989

James Hulm, Vice President
Solvents Recovery Services of
New England, Inc.
P.O. Box 362 Lazy Lane
Southington, CT 06489

Dear Mr. Hulm:

EPA has completed its review of SRSNE's proposal to modify the on-site groundwater recovery system on a test basis as outlined in the October 17, 1988 letter from YWC, the June 22, 1989 letter from TRC, and the September 12, 1989 letter from SRSNE, as qualified by the stipulations in the December 9, 1988 letter to SRSNE from EPA. By submitting this proposal, SRSNE has signalled its recognition that the on-site system is not in compliance with the Consent Decree entered between EPA and SRSNE in February of 1983. However, EPA has concluded that the proposal as written fails to provide for changes which would be necessary to bring the system into compliance with the Consent Decree. In order to prepare such a proposal, SRSNE must act in accordance with paragraph 8(G) of that Decree, which requires that:

> "In the event the cone of influence maintained by the operation of the groundwater recovery system cannot meet the projected influence of the system approved by EPA pursuant to paragraph 8(B) hereof, due to design or construction deficiencies, SRSNE shall promptly submit to EPA for approval such modified engineering design specifications as shall be necessary to meet the projected influence[1]."

Since only three wells are involved in the proposal submitted by TRC on SRSNE's behalf, the implementation of the proposal could not possibly achieve the projected influence of the system approved by EPA pursuant to the Consent Decree. Moreover, SRSNE has failed to give any indication of whether the proposal is part of an overall plan to eventually attain the projected influence and, if so, how it relates to that overall plan.

As specified by EPA staff to Mr. Bartley in a telephone conversation on September 7, 1989, SRSNE must submit a technically complete and clear proposal in order to comply with the Consent Decree. This proposal should detail the modifications to the system and, at a minimum, include the following:

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[1] The terms "cone of influence" and "influence" are defined in paragraph 8.B (p. 3) of the Consent Decree.

EXHIBIT 19

1) a schedule for field activities to be undertaken;

2) a summary of all currently known information about the local hydrogeology and a description of the hydrogeological information to be obtained;

3) locations, methods and materials relating to well installations;

4) pump design plans;

5) complete descriptions and raw data relating to aquifer tests, including pumping rates and cones of influence;

6) hydraulic verification through the installation of an adequate array of piezometers (e.g. one cluster near each pumping well and one cluster between each pair of pumping wells) to measure in three dimensions the hydraulic gradient established to prevent the off-site migration of subsurface contaminants;

7) clarification of all terms used in the proposal;

8) provisions for daily readings of pump controllers with weekly measurements from the wells themselves; and

9) verification of groundwater quality improvements through monitoring.

EPA will not prevent SRSNE from conducting tests of the on-site system that could constitute the first phase of a proposal which complies with paragraph 8(G) of the Consent Decree. However, SRSNE must be aware that the proposed work, because it is not part of modified engineering designs and specifications approved by EPA in accordance with paragraph 8(G) of the Consent Decree, will result in SRSNE remaining out of compliance with paragraph 8 of the Consent Decree. EPA therefore recommends that SRSNE incorporate its current proposal into a comprehensive plan for achieving and verifying a cone of influence in accordance with the Consent Decree, using the nine above-listed conditions and the information in EPA's December 9, 1988 letter to SRSNE. [2]

---

[2]If a plan for overall modification provides for enlarging existing boreholes and testing part of the system at the onset, such plan should include which wells will be enlarged.

As you know, in addition to the Consent Decree violations discussed above, SRSNE is currently more than two years delinquent with regard to the reporting requirements stated in paragraph 8(E) of the Consent Decree. Under this paragraph, SRSNE should be submitting hydraulic performance reports on a quarterly basis. The last hydraulic performance report received by EPA is dated October 23, 1987. It should be noted that the hydraulic performance reports received by EPA were almost all submitted late, failed to report measurements from all eighteen approved hydraulic verification wells, and failed to include updated groundwater contour maps, all of which are required by the Consent Decree and/or the on-site engineering report approved pursuant to the Consent Decree.

As stated in the Consent Decree, the hydraulic performance reports should describe (with the use of groundwater contour maps) how the on-site groundwater recovery system is preventing the off-site migration of subsurface contaminants and extending its influence to the maximum practicable extent to off-site contamination. In addition to the above, EPA and DEP expect that forthcoming hydraulic performance reports will be submitted on a timely basis and will include data from all of the approved wells.

If you have any questions regarding the information contained in this letter, please contact Matthew Hoagland of my staff at (617) 573-9666.

Sincerely,

Margaret Leshen

Margaret Leshen, Chief
Connecticut Superfund Section

cc: Matthew Hoagland, EPA
John PodgursRi, EPA
Donna Kiefer, EPA, Office of Regional Counsel
Margaret Leshen, Chief, CT Superfund Section
John Anderson, Deputy Commissioner, DEP

STATE OF CONNECTICUT
Department of Environmental Protection
165 Capitol Avenue - Hartford, Conn. 06106
Bureau of Water Management

11-20-89

Mr. James R. Hulm
Vice President
Solvents Recovery Systems
P.O. Box 362
Southington, CT 06489

Certified Mail
#1421839

0015555

0015556

SOLVENTS RECOVERY SERVICE
OF NEW ENGLAND, INC.

P.O. BOX 362

SOUTHINGTON, CONN. 06489

TELEPHONE: (203) 621-8383
TELECOPIER: (203) 621-0810

CERTIFIED MAIL -- RETURN RECEIPT REQUESTED

November 22, 1989

Margaret Leshen, Chief
Connecticut Superfund Section
United States Environmental Protection
Agency
Region I
J. F. Kennedy Federal Building
Boston, MA 02203-2211

RE: SRSNE On-Site Groundwater System

Dear Ms. Leshen:

We have received on November 20, 1989 your letter dated November 7, 1989 concerning SRSNE's proposed testing of modified pumps in three wells in the on-site groundwater recovery system. This test was proposed because previous pump motors in these wells would burn out when the wells were pumped dry. SRSNE has previously admitted that the motors were not supposed to burn out, that new pumps were needed, and that this testing would determine whether the new pumps would permit the system to function as designed.

In light of your comment on Page 2 of the letter that "EPA will not prevent SRSNE from conducting tests of the on-site system that could constitute the first phase of a proposal which complies with Paragraph 8 (G) of the consent decree." SRSNE intends to go forward with the test starting next week. SRSNE understands that this testing may not constitute a complete approach for making sure that the on-site system performs as designed, but SRSNE believes that this testing is a necessary first step to determine exactly what further measures should be taken.

EXHIBIT 20

SRSNE's consultants will be undertaking an analysis of what to include in the more complete proposal concurrently with conducting the tests as previously described in SRSNE's earlier correspondence. Of course, our consultants will also advise USEPA when the actual testing will take place.

Sincerely,

Carleton H. Boll
President

CHB/els

cc: Certified Mail/RRR

Matthew Hoagland, EPA
John Podgurski, EPA
Donna Kiefer, EPA, Office of Regional Counsel
John Anderson, Deputy Commissioner, DEP

bcc: James Stewart, Esq.
Mark Sussman, Esq.
Russell Bartley
James R. Hulme
Kenneth W. Knight

(7)

Well no	1st Casing Ref	2nd casing Ref	Casing Washout Grab Sample	Cored interval (ft)	Core Recovery	Well Screen Interval	Drill Rate min/ft	Comments
①	17.5'	—	Sand, F-VC, Br, some Fine to C gravel, angular, Some silt	17.5-21.5	8" Gniess (bldr) upper Portion of C.B.; VF Gr Sandstone (siltstone) 4" in Tip of C.B., Red Br, well sorted.	20,8"- 9'11" 10'9" 0.75'	B.5	Hard driving from 11.5' to Refusal Went Thru approx 2½' of Gniess boulder before encountering bedrock (ss) no odor
②	13'3"	—	Sand, F-VC, Br, multi-color w mica; and fine gravel, subrounded; Some silt	13'3"-17.5	4" of Gniess boulder stuck in tip of core barrel	17'0"- 6'3" 10.75'	4'8"	Reddish Sandy Core wash water of hardness of dr.ill'g indic. 35 under approx 16" of boulder no odor
③	13.0"	24'	Sand, F-VC, Br. w/mica, and F-m gravel, subrounded; some silt	29'9" +p 29'3"	Siltstone, Red br w/ Gniess Frags	28'-17'3" 10.75'	4'3"	
④	11'9"	Spun casing to 24'	〃 〃	Cored 11'9" to 24'	Siltstone, Red Br, v Hard w Gniess Frags	16'1" to 26'10" 10.75	5'5"	See Field Book
⑤	9'8"	24'3"	〃 〃	24'3" +p 26'3"	Siltstone, Red Br	15'3" to 26'6" 10.75	2'4"	
⑥	9'8"		〃 〃	9'8"-16'2" 22'11" +0 25'11"	Gniess boulder + uncons Cobble lt tip hdness & Color SS	10'6" to 25'9" 15.75	5'3"	Dull Cote bit - v hard coring
⑦	15'10"	20'3"	Sand, F-C 〃 〃	15'10-19'0" 20'3" +0 23'3"	Gniess boulders. Qtz boulder Cobble hdness & Color - SS	12'4" to 23'1" 10.75	4'5"	Hard coring thru boulders
⑧	13'10"	20'10"	〃 〃	13'10-17'0" 20'10" +0 23'10"	Gniess boulders & Uncons'l. VF Gr SS & Siltstone Red Br	12'10" to 23'7" 10.75	4'4"	Casing at angle due to hard drilling (went around boulder

EXHIBIT 21

0015558

	Casing Retrieval	Casing Interval	Casing Washout Grab Sample	Interval(s)	Core Recovery	(Screen Int.) Depth	Comments Yields
(9)	14'1"	21'1"	Sand, F-C, Brown; Some F-m Gravel; Tr Silt	14'1"-20'5"	Gniess boulder wash - Br Sandy Soils	13'11" to 24'6" 10.08	4'4½
				21'4" to 24'4"	Poorly sorted F-VC SS RedBr		
(10)	15'7"	21'10"	" "	15'7"-20'7"	Gniess Boulder & Br Sand soils (wash)	13'11" to 24'8" 10.75	4'3½
				21'10" to 24'10"	Color & Hdness - SS (cobble)		
(11)	17'0"	22'4"	" "	17-22'	Gniess boulder & then wash! Br Sandy soils	10'10" to 24'1" 13.26	4'5½
				21'4" to 24'4"	Color & hdness SS (cobble)		
(12)	23'1"		Sand, F-C, Brown: Some F-m Gravel; To silt	23'1" to 26'1"	qtz stuck in Core barrel tip - no other recovery	25'8" to 12'5" 13.25'	4'4½ 2'C No sample recoverd in CoreBarrel - plug in Tip (Qtzite) - no boulders encounter
(13)	12'5"	18'5"	Sand, F-VC, Br; Some F-m Gravel; Some silt	12'5" to 17'5"	1ST recovered C gravel, Sandstone boulder & Sed	23'8" to 12'11" 10.75'	4'4½ 2'C 1st Core: recovered coarse gravel, SS boulder & sed. next, F, RedBr
				20'9" to 23'9"	2nd: Gniess boulder & then wash - wash ind. SS		
(14)	19'2"		Sand, F-VC, Br; Some F-m Gravel; Some Silt	19'2" to 23'8"	Sandstone (siltstone)	22'6" to 11'9" 10.75'	3'1½ 1½'C Core: Gniess Bldr 1', then 3'6" SS, Red Br Wash
(15)	20'0"	-	Sand F-VC, Br: some F-m gravel; Some Silt	20'0" 23'0"	Sandstone, Very F gr	23'0" to 12'3" 10.75'	4'8 2½ no boulders encountered when drilling Casing No odor
(16)	14'2"	22'5"	Sand, F-VC, Br; some F-m Gravel; some Silt	14'2"-19'2"	gniess boulder	25'8" to 14'1" 10.75	4'4½ 2'C 1ST Core: gniess boulder 14'2"-14'11", then Sediments RdBr to 19'2" 2nd Core: odor
				22'5" to 25'11"	SS, brown, poorly sorted F-C Gr.		

	1st Casing Refusal	2nd Casing Refusal	Casing Washout Grab Sample	Cored Interval(s)	Core Recovery	(Screen int)	Depth		Comments
(17)	~~19'6"~~ 19'6"	22'2"	Sand, F-VC, Br; Little F gravel, Tr silt	19'6"-19'8" / 22'2" to 25'2"	gneiss boulder / Gneiss in tip-Wash Color indic SS (and Mass)	25'1" to 10.75 / 4'1"	4'4"	5'0"	1st Core: 8" Gneiss bldr, then unconsolidated sed. to 19'6" 2nd Core: No odor
(18)	12'6"	2nd 15'6" / 3rd 22'9"	" " "	12'6"8 to 15'10" / 5'6"-18'6" / 22'10-25'0	1st Gneiss / 2nd Gneiss / 3rd Sandstone, Poorly sorted F-VC Br	25'10 to 15'0" 10.75	4'4"	2'6" 3'0"	1st Core: 1' gneiss bldr, then unconsolidated to 15'10" 2nd Core: 7" " " " " 18'6" 3rd Core: no odor
(19)	17'3"	—	Sand, F-VC, Br and Silt; Some F gravel	16'0" to 19'0"	Color & Hardness SS	18'3" to 8'6" 10.75	4'10"	2'6"	18'15" 10 7.0 no odor
(20)	18'6"	—	Sand, F-VC, Br, and Silt; Some Fine Gravel	18'9" to 21'6"	Sandstone, Poorly sorted, F-VC gr lt brn.	21'3" to 10'6" 10.75		2'6"	no odor
(21)	19'10"	—	Sand, F-C, Brown, Multi-Colored mica and gravel, F-m; Little silt	19'10" to 22'10"	Sandstone, poorly sorted, F-VC gr, Red Br	22'10" to 12'1" 10.75	4'3"	1'4"	No boulders encountered No odor
(22)	21'4"	—	Sand, F-VC, Brown; Some Gravel, F-m; Some Silt	21'4" to 25'3"	Recov. 1'8" Sandstone, poorly sorted, Red Br F-VC gr	24'7" to 13'10" 10.75	4'3"	2'6"	No boulders encountered no odor
(23)	16'8"	—	Sand, F-VC, Brown, multi Colored mica; coal gravel, F-m; Little Silt	16'8" to 21'0"	Gneiss	21'0" to 10'3" 10.75	4'4"	1'8"	Driller said he cored 3', but due to casing refusal depth suspect he cored 4'4". Red Br Core Wash, hard coring (during 2ft observed) indicated SS 18'-21" no odor
(24)	11'4"	—	Sand, F-VC, Br; Some gravel, F-m	11'4" to 16'4"	3'9" Gneiss boulder & no ss recov	16'3" to 5'6" 10.75	4.0"	none	Hole caved in ~~and~~ in Sand Int. - Core wash ind. change from Gneiss to SS? 15'4"-16'4" - SS interval possibly unconsolidated - had to wash again no odor detected
(25)	12'1"	—	Sand, F-VC, Brown; Some F-m Gravel, subrounded, Little Silt; Tr mica	12'1" - 17'3"	4' of Gneiss boulder recovered	16'11" to 6'2" 10.75	4'2"	none	Color change of core washout water from gray To Red Br, and hardness of coring indic. SS below Gniess boulder (16'5"-17'3") no odor detected

SOLVENTS RECOVERY SERVICE OF NEW ENGLAND, INC.

GROUNDWATER REMEDIATION COSTS -- 1983 - August 1990

1.	Settlement Costs			
	Southington Board of Water Commissioners		$ 69,778	
	Connecticut Fund for the Environment		10,000	
2.	Payments to YWC for Groundwater Remediation Activities:	1983	107,573	
		1984	77,119	
		1985	69,000	(1)
		1986	70,428	
		1987	33,429	
		1988	23,537	
3.	Cost of On-Site System (S. B. Church)		136,840	
4.	Cost of Off-Site System (Innes Construction)		215,851	
5.	Estimate Start Up Cost - On-Site		50,200	
6.	Additional Monitoring Wells			
	C. Welti & Supervision	(3)	4,972	
	Associated Boring & Supervision	(3)	2,956	
7.	Q.E.D. Pumps		6,381	
8.	TRC - 1989/1990		52,930	(2)
9.	S. B. Church - 1989/1990		19,580	
		TOTAL	$950,574	

NOTES: (1) Estimated at 50% of billing.
(2) Includes estimate at 50% of billing, May 1990.
(3) Telcone K. Warner, August 24, 1990

EXHIBIT 22